

# THE IRON AGE

THURSDAY, JANUARY 31, 1889.

## The Buchanan Magnetic Rolls.

In a paper descriptive of a number of iron ore concentrating plants and machinery published in the *Journal* of the United States Association of Charcoal Ironmakers, John Birkinbine, the editor, furnishes the following data relating to the Buchanan magnetic rolls:

More thorough and systematic work has been done with this machine than on any other. The Edison machine has treated a larger number of ores than any other and

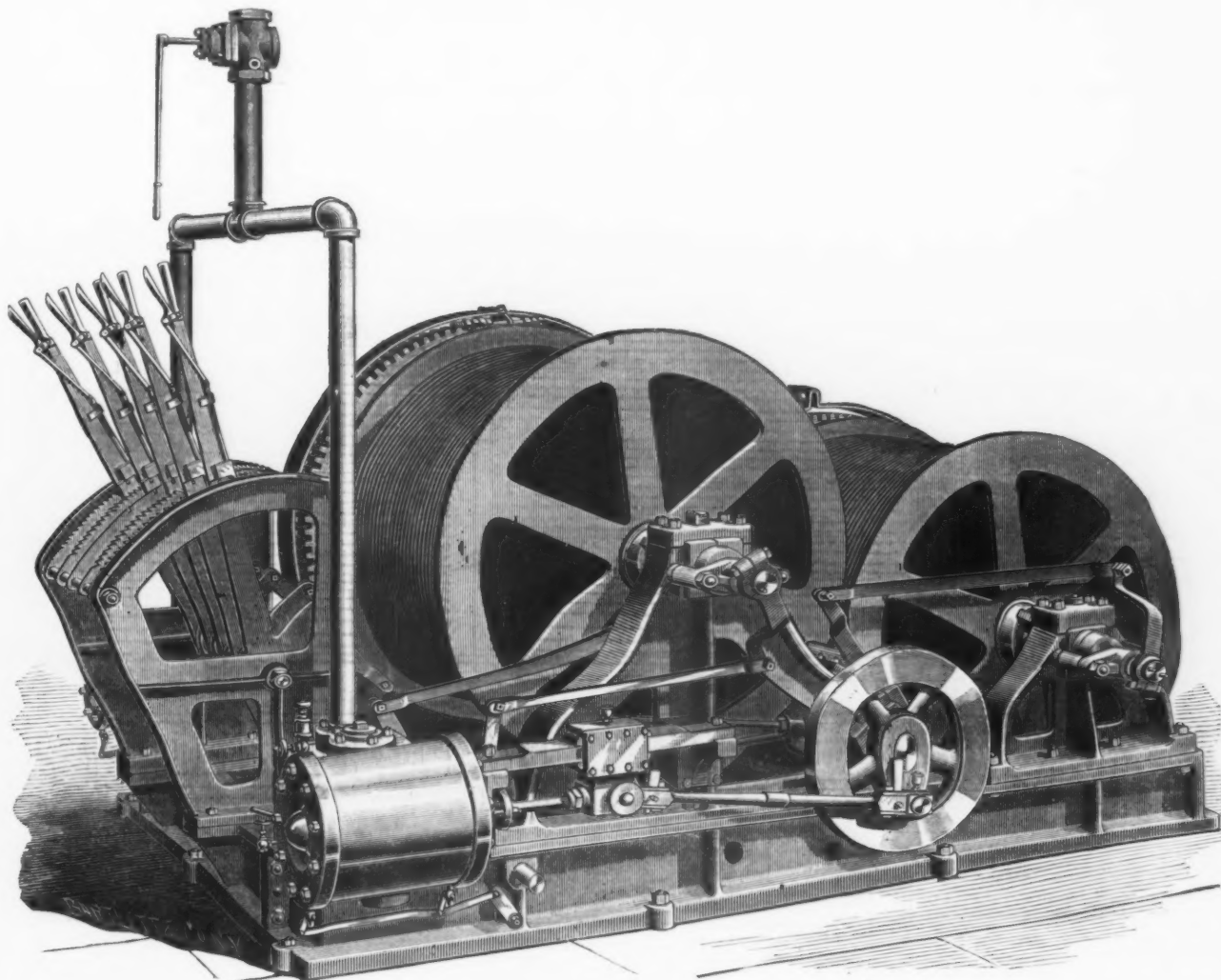
around the magnetic portion, adhering until it passes beyond the magnetic influence, while the non-magnetic particles drop between the rolls.

The Messrs. Cheever have been experimenting with these magnetic rolls to determine the commercial problem of treating the dump-pile which represents the lean material left after sorting out the merchantable ore taken from their impressive tunnel in the Croton hills. In connection with these experiments the Messrs. Cheever have established a chemi-

than to notice the merits of the appliances used. It will be noted in the analyses given above that the sulphur increased in the concentrates of Croton ore, owing to the fact that it passed over with the magnetite.

## Hoisting Engine.

Hoisting and conveying material by means of a suspended wire cable has been so widely adopted as to call for machinery more or less particularly adapted for the service. The hoisting engine here



HOISTING ENGINE, BUILT BY THE LIDGERWOOD MFG. COMPANY, NEW YORK.

shown its capabilities under varying conditions, and the Wenström machine has also been operated on several ores. The Buchanan rolls, on the other hand, have been operated practically on one ore—viz., that obtained from the Croton mines in New York. The crushing plant at these mines has been utilized by the Messrs. Cheever to reduce ore from the extensive waste pile at the Croton mines to about 15-mesh size, and this has been passed through the Buchanan magnetic rolls. These consist of iron rolls revolving on journals which are carried on insulated standards wound with copper wire. By connecting these wires with a battery the standards become electro-magnetic of opposite polarity and the rolls are charged thereby, making a magnetic field between the rolls. The ore being fed on the rolls, which revolve toward each other, is carried

cal laboratory, and the following determinations are selected from a larger number of analyses made by Mr. Edwin K. Landis, chemist:

### Separation of Croton (Theall) Ore by Buchanan Magnetic Rolls.

	Crude ore.	Concentrates.	Tailings.
Iron.....	37.968	64.594	13.207
Silica.....	29.30	5.350	50.20
Phosphorus....	0.383	0.050	0.492
Sulphur.....	0.522	1.255	0.924
Iron.....	31.28	62.56	4.66
Silica.....	35.50	6.825	58.05
Phosphorus....	0.271	0.058	0.527
Sulphur.....	0.784	1.320	0.945

The analyses given in this article are not necessarily comparative as applied to the various machines used, for with each machine the conditions are different, and the determinations are given to show the possibilities of magnetic separation rather

illustrated was designed to meet the requirements of this character. Both drums are loosely mounted and are entirely independent of each other in operation. They may be thrown in and out of gear with the engines in motion, either separately or together, or one drum may be employed in lowering while the other is hoisting; or both drums may be thrown into gear and the engine used as a regular reversible engine, one load being hoisted while the empty cage is being lowered. This independent construction permits of one drum being thrown into gear to wind up the main rope, while the other drum, being out of gear and loose on the shaft, pays out the tail-rope. Reversing the engines, of course, reverses their operations. The drums are made in one casting, turned off true and spirally grooved for the rope. The friction is of the double-cone type and

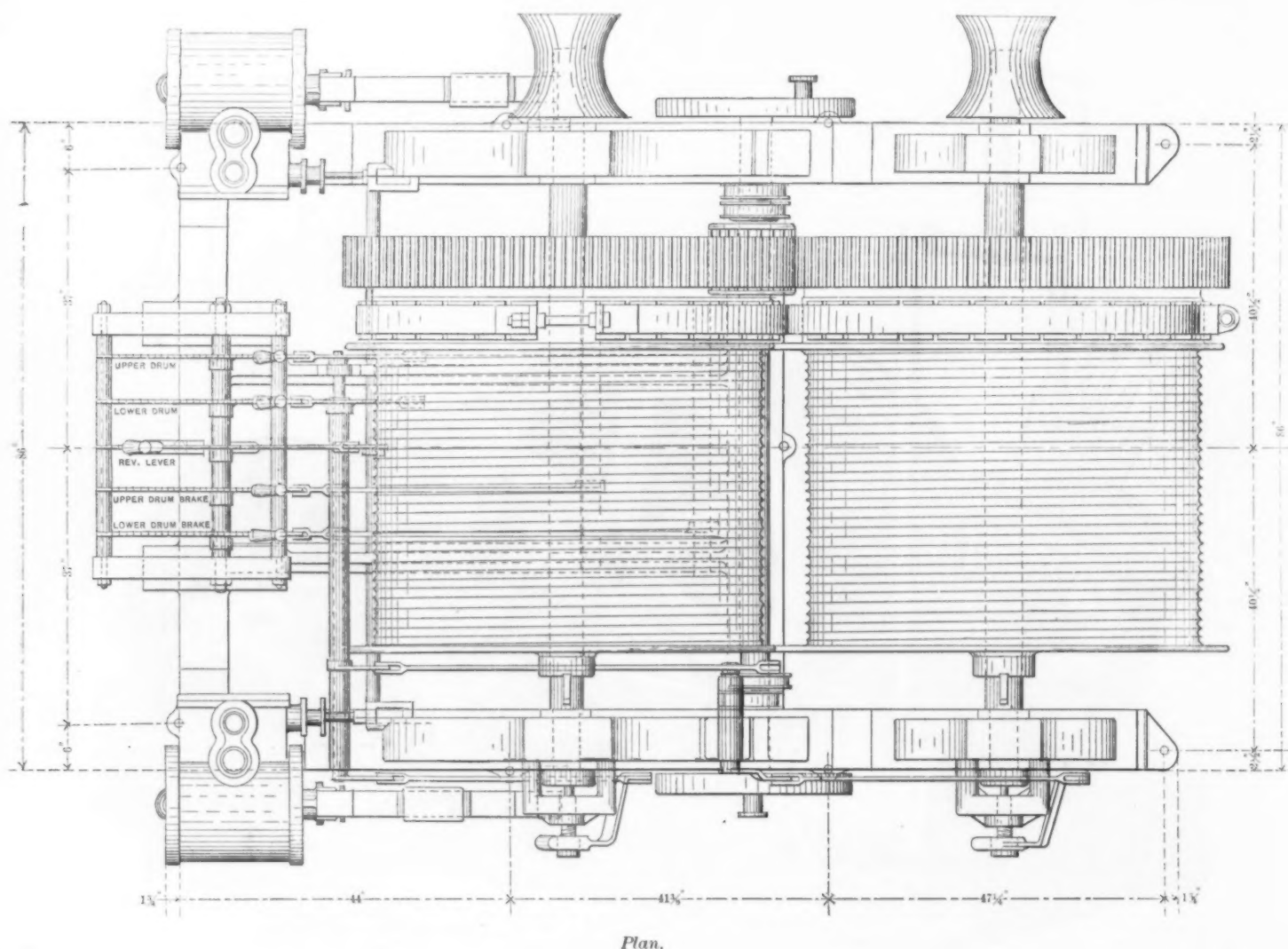
is composed of segments of hard wood, bolted fast to spur-wheels and turned off conically to suit the flanges of the drum with which it engages. A very small movement of the drum along the shaft is sufficient to engage it with the friction surface. This is accomplished by means of a powerful lever, screw and nut at the end of the drum shaft, attached to the side stand, and communicating motion to the drum by means of a steel pin, cross-key and collar. The friction is such that a comparatively light pressure on the lever is sufficient to hold the drum firmly in gear against any load the engine can hoist. When the pressure is removed the drum is released by a spiral spring on the shaft between the drum and gear-wheel. The

ingots is considerably behindhand. The *Engineer* reports that Bell Bros. do not intend to adopt the usual cogging mill and hot slab shears for reducing their ingots into blooms of marketable size and shape. They are adopting the hydraulic squeezer system, which has been so successful in making forgings at Manchester, Sheffield and elsewhere. Blooms will be made for the general market, and it is expected they will be purchased by many of the owners of ironworks who do not care to put down a steel melting plant themselves. The situation of the Port Clarence works is exceedingly good for carrying on a trade of this kind. Blooms can be sent thence to any consumer's works situated on the seaboard on the Northeast Coast, in full

tends along the line for instant communication with headquarters in case of accidents or break-downs. The machinery started off very well, and the new line promises to work very satisfactorily.

#### Butterworth on the Despotism of Labor.

The alleged "Despotism of Labor" was the occasion of a vigorous philippic by Representative Butterworth, of Ohio, last week, the special provocation being an attempt to banish steam printing presses from the Bureau of Engraving and Printing at the instigation of hand plate printers. He wished to go on record as oppos-



HOISTING ENGINE, BUILT BY THE LIDGERWOOD MFG. COMPANY, NEW YORK.

brake is a broad iron band, lined with blocks of hard wood, which encircles the flange of the drum. The gearing is the usual spur-wheel and pinion type. The engines are similar to those which are so well known in connection with hoisting machinery of this make. All movements of the hoisting engine are controlled by five levers placed side by side, as shown in the perspective and plan views; the throttle is also within convenient reach of the operator. These engines are made by the Lidgerwood Mfg. Company, of 96 Liberty street, New York.

The new steel works erected at Port Clarence, England, by Bell Bros., of whom I. Lowthian Bell is a member, are ready to commence operations so far as to make ingots; and, indeed, a trial cast has already been made. But, as in the other case, the machinery for dealing with the

craft-loads, for about 2/ per ton. The process adopted by Messrs. Bell Bros. is that known as the "neutral" process, the hearth of the furnace being lined with chrome ore, or other material which is neither distinctly acid nor basic. M. Pourcel, formerly of the Terre Noire Works, in France, occupies the position of responsible adviser to the firm on technical matters connected with the steel melting plant.

A new cable street railway was formally opened for business in Chicago on the 22d inst. It is the Lincoln avenue branch of the North Chicago Street Railway and is about a mile and a half in length, extending a short distance beyond the city limits. The power plant consists of eight boilers of 750 horse-power and two steam engines built by Robert Wetherill & Co., of Chester, Pa. A complete electrical apparatus ex-

ing any change in the presses at the behest or dictation of any combination or society or collection of individuals. Mr. Butterworth said that he approved of the combination of labor, but he did not approve of force being used to exclude any American from any walk of life or any calling. It was needless for members to shut their eyes to the fact that some of these organizations had starved widows and orphans into compliance with their behests. While he in no way objected to organizations in the interests of men, wherever and however employed, he protested against the utilization of those organizations for the purpose of compelling obedience to their high behests except by argument and the influence of moral suasion. All he insisted upon was that members should stand by their deliberate judgment and not yield to the suggestion that it would shorten their political life not to do so. He denied the



right of any association to say to his boy that he should not learn the trade of his father. Against that right he inveighed. "If this House had done its duty," said the speaker, "the children of men who made and kept the republic would not be crowded out of work by the shiploads of lazzaroni from Europe who landed daily on our shores." In brief, Mr. Butterworth's speech was a protest against the bulldozing of trades unions and a contention that every man has a right to the management of his own affairs.

### The St. Mary's Canal.

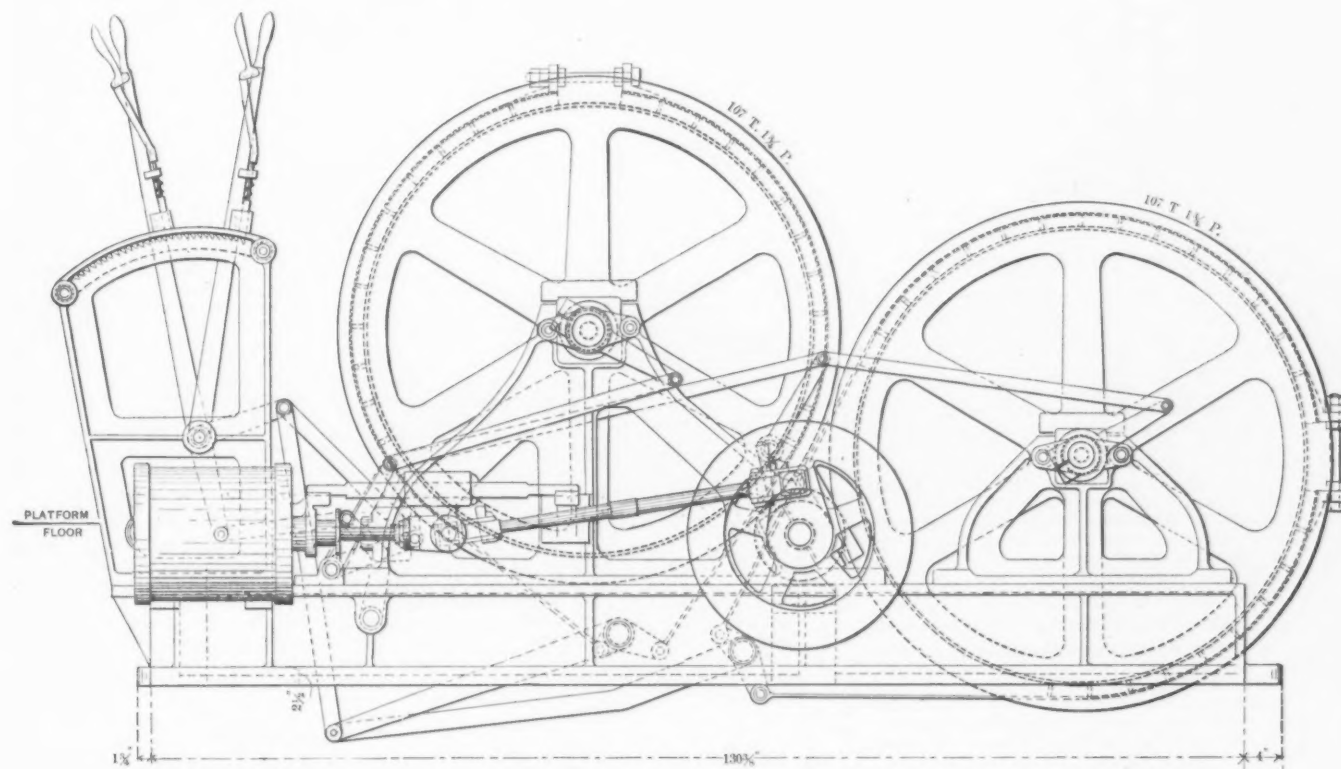
The report of Col. O. M. Poe to the Chief of Engineers, on the commerce of the St. Mary's Falls Canal, Michigan, for the last navigation season, gives fresh illustration of the magnitude of the commerce which comes through the great

cargo of registered vessels in 1888 was 876.6 tons, as against 644 tons in 1887, an increase of 36 per cent.

As to the quantity and value of the respective kinds of freight carried through the canal in 1888, as compared with 1887, Colonel Poe's report gives the following figures: Coal 2,105,041 tons, an increase of 56 per cent., valued at \$7,367,643; flour, 2,190,725 barrels, an increase of 39 per cent., valued at \$10,953,625; wheat, 18,596,351 bushels, a decrease of 19 per cent., valued at \$18,224,423; grain other than wheat, 2,022,308 bushels, an increase of 161 per cent., valued at \$1,981,861; manufactured iron, 48,859 tons, a decrease of 20 per cent., valued at \$2,442,950; pig iron, 14,844 tons, an increase of 5 per cent., valued at \$252,348; salt, 210,433 barrels, an increase of 3 per cent., valued at \$210,433; copper, 28,960 tons, a decrease of 17 per cent., valued at \$5,792,000; iron ore, 2,570,-

vides all that is necessary to render the Government absolutely independent of the world in the matter of building and equipping a navy. There is ample competition among bidders for the construction of engines and machinery, and in this matter American enterprise and ingenuity seem likely to lead the world.

**American Patents on Foreign Inventions.**—An important decision affecting the life of an American patent has been reached by the United States Supreme Court in the case of the Rate Refrigerating Company, applicant, against George B. Hammond & Co. By the statute of the United States it is provided that when a patent is taken out in a foreign country, and one subsequently is taken out in this country, the patent shall expire in the United States with the expiration of the patent in the foreign country in which it first runs out. Under



Side Elevation.

HOISTING ENGINE, BUILT BY THE LIDGERWOOD MFG. COMPANY, NEW YORK.

lakes. It was valued last season at \$82,156,019, or \$28,000,000 more than in 1885, \$13,000,000 more than in 1886, and \$3,000,000 more than in 1887. The failure to keep up the proportionate increase in 1888 is attributed to the short crop of merchantable wheat, the diminished demand for railroad iron in the Northwest, a restricted output from the Lake Superior mines and shipments of iron by rail. It is assumed that these causes are only temporary and that the percentage of increase will probably be restored next season. As compared with the season of 1887, there was an increase in the registered tonnage of 233,061, or 5 per cent., and in the freight tonnage of 916,776, or 17 per cent. The total freight tonnage was 6,411,423 tons. It is noteworthy, however, that while both the registered and freight tonnage increased, the number of vessels passing through the canal was less by 1552, or a decrease of 17 per cent. The average tonnage of registered vessels in 1887 was 574.2, but in 1888 it was 703, an increase of 22.4 per cent., although the number of registered vessels in 1888 was 216 less. The average

517 tons, an increase of 3 per cent., valued at \$8,996,809; lumber, 240,372,000 feet, an increase of 45 per cent., valued at \$4,326,696; silver ore, 3385 tons, an increase of 867 per cent., valued at \$520,579; building stones, 33,541 tons, an increase of 150 per cent., valued at \$335,410; and unclassified freight, 345,854 tons, valued at \$20,751,240, or about 5 per cent. of the total freight tonnage.

The condition and prospects of the United States Navy are referred to by the House Committee on Naval Affairs, which quotes the Appropriation Committee as saying that the appropriation of \$625,000 for extending the gun plant at the Washington Navy Yard will be all that is necessary to put three different navy yards in condition to build the hulls of the finest modern vessels, armored and unarmored, as well as for the equipment of a great plant for the assembly of heavy ordnance. Satisfactory progress is being made by the private contractors for supplying heavy gun and armor plate forgings and for rapid-fire machine guns. The bill reported pro-

the Canadian law patents are granted for five years, with the privilege of renewal for two periods of five years each. The question in this case was whether the lifetime of the American patent expired five years from its issuance in Canada or at the end of 15 years, which is the limit to which the life of a patent may be extended in Canada. The Supreme Court holds that the lifetime of an American patent first taken out in a foreign country does not expire until the extreme limit of time for which an extension of patent may be secured in the foreign country. The decision of the Circuit Court of Massachusetts is thus reversed.

Several of the big buildings of Philadelphia have recently had placed in them scales with a hopper receptacle for holding several tons of coal. They are situated under the sidewalk shutters, and the coal is dumped directly into the hopper from the cart and then weighed. The engineer of one of these buildings says that thus assuring full weight in the coal he buys he saves the value of the scale many times during the year.

## HUNT'S RAIL SPECIFICATIONS.

### The Views of Railroad Men.

We print below the opinions expressed by railroad managers and engineers on the subject brought up by the paper of Captain W. R. Hunt in the columns of the *Railroad Gazette*. One chief engineer of a trunk line writes:

Instead of tests made by the company, we accept a guarantee for a number of years from the manufacturers, which is evidently the simplest way of getting good rails, and no corporation can nowadays exact both. In other words, we must either tell the manufacturers how to make the rail and then stand by the result, or leave it to him and accept his guarantee. Under our contracts we have the right to examine the results of analyses made at the shop, and we see to it that the rail is properly rolled to the standard section, is straight and without flaws.

Mr. Katté concurs generally with Mr. Hunt's views, as given in the paper quoted from. Mr. W. H. Brown, of the Pennsylvania, says: "From our observation and experience we find that the rails now furnished this company improve in the wearing quality and strength. We have very little or no trouble of late years from broken rails, since we keep the amount of carbon within the limits of 0.30 to 0.50 per cent. of the company." Mr. J. T. Richards, Asst. Chief Engineer of the Pennsylvania, speaking of the specifications, says:

These have been formulated gradually and from experience in the wear and breakage of rail, gathered through a long series of years, and if they are not perfect they are the best we can put forth at this time. As you know, there is a great difference of opinion among engineers and managers of railroads on this subject, and, in my opinion, it is right that there should be, as the traffic and also the extremes of temperature are so widely different on the railroads of the United States, even though they be not many miles apart; hence it would be manifestly impossible to establish an absolute rule as to the chemical and physical characteristics of rails to which all the railroads could conform.

Mr. Jas. O. Osgood, Chief Engineer Lake Shore and Michigan Southern, says:

I am not prepared to state just what chemical tests I should recommend, but in my opinion it is very desirable that chemical tests should be made which will secure uniformity of material and regulate the amount of carbon and phosphorus. Rails as ordinarily furnished I have generally found too soft to wear well, and I believe, with proper care in regard to the chemical constituents, that a hard rail can be obtained which will be much more serviceable than the ordinary product of the mills, and which will not be subject to much breakage. In addition to any chemical tests which may be required, much more than ordinary care should be taken in straightening rails and in inspection for surface defects. No doubt physical tests of the material should be had also. I consider the present practice of rail inspection entirely inadequate to secure proper results.

Mr. J. D. Hawks, Chief Engineer Michigan Central, who is known as a careful observer and student of rail wear, writes:

I am entirely at sea in regard to proper specification for steel rails. I am satisfied in my own mind that the difficulties we have had of late years from soft rails are largely owing to mechanical construction. I cannot learn that any less pains are taken with the quality of material than formerly, and never yet have seen a soft rail myself with a thin head, our trouble in that direction having been entirely with the 65-pound rail, which has a head out of all proportion to the size of the rest of the rail. The head is so large that in order to get the rail through the rolls before the neck and flanges get too cold for rolling, the head has to be kept at altogether too high a heat to produce satisfactory results. Our new 80-pound rail\* is designed to obviate this difficulty. If it is not a success in this direction, then the rolling mills have got to get up some other excuse for making poor rails. I think the Michigan Central has met

\* This rail was shown in the *Railroad Gazette*, December 7, 1888. It has a head 2½ inches wide and 1½ deep, containing about 42.4 per cent. of the total metal. This head is relatively considerably lighter than most modern sections

every excuse, except this latter one of the large head, that the steel men have offered. We have shown them that their rails are laid on a good road-bed with an abundance of ties and good joint fastenings, and have also shown them that the excuse they make of heavier and faster traffic is no excuse at all on our road, as we run the heavy and fast traffic over some of our old 60-pound rails with the same conditions as to road-bed. The soft rail that I have had trouble with has always been very coarse grain. A piece taken out of the head, or even the entire head, and forged down under a steam hammer, will show fine grain. There have been, of course, a great many suggestions offered as to manner of inspecting rails. We try to have our rails carefully inspected for flaws, splits at the ends and crooked or lumpy surfaces and lines. The physical tests have not so far amounted to much, and I am at sea as to what really constitutes a proper physical test, especially in view of the fact that where I have undertaken to specify certain physical qualities that the rail should possess, the rolling mill has refused to sign the contract. It is true that it has been my misfortune to undertake to insert these qualifications in the contract on a rising market. If I could catch the market on the drop after the rail contract was as good as closed I might be more successful. I have, of course, great hopes that our new 80-pound section will give us much better results than the 65-pound section. The mill people have only of late years complained about the 65-pound section being too large in the head. This theory of the large head was perhaps good enough at the time the large head was first adopted. I inclose sketch showing how the large head came to be adopted on the L. S. and M. S. You will notice that the section of 60-pound rail is, in the light of the present experience, a very good one. The same distance between flange and head was maintained on the 65-pound rail, and the five pounds were added to the head, except a very small bit on the extreme end of the flange. The rolling-mill people did not object to this at the time, and since then, on many roads, the idea has been carried still further by adding more weight to the head in a 70 and 75-pound rail.

While the theory of this addition to the head is that after ¼ or ½ inch of the material is worn off the head there will still remain as good a section as the original lighter section, practice shows altogether a different state of affairs. The 60-pound rail that we still have in track has a thin and light head. It has been subjected to very heavy traffic for 15 or 16 years, and will not show ¼ inch worn off the head during all that time. If the 80-pound rail will give us as good service as this old 60-pound it is all that I ask. I do not expect any better service, but shall be very well satisfied with rail that will last under our traffic for 15 years. We certainly have not had anything of the kind since we have adopted a 65-pound section, either of American or English make. The 80-pound rail will be laid with a very much improved joint fastening as compared with the short four-hole splice of the 60-pound rail, and should give better results on that account. In fact, much of the 60-pound rail was laid originally with chairs with only a two-hole splice. It stood this kind of a joint very well, and because it did stand with a chair for an anvil, it shows to me that the railmen are paying altogether too much attention to the style of joint that should be used. The joint being outside of their contract, they have found it convenient to lay a good share of our trouble from soft rail to poor joints and joint fastenings.

Mr. Robert Sayre, second vice-president Lehigh Valley, is another engineer who has given especial attention to rails. He writes:

I have never prepared a specification for the test of rails, for the reason that we obtain almost all our rails from the Bethlehem Iron Company and depend upon it furnishing us with a good rail, and as we are near the mill we can return any failures. The only specification I have is with regard to the carbon. I have raised this from 0.40 to from 0.50 to 0.55, and am considering the propriety of limiting it to 0.60. I believe this right. As we use a heavier rail I think we can use a higher carbon and get better results.

The chief engineer of an Eastern line carrying a very heavy and fast traffic writes:

This company has been trusting the mills that roll the rails, and I do not think they are up to the proper standard. They are considerably inferior to English rails—at least those made some 15 or 20 years ago. We have taken out of this company's main line this summer John Brown rails that have been in the track since 1868, 60 pounds per yard, and they were not so much worn but that they will be good for a number of years yet. I have doubts if our new rails, which have only been in the track a short time, will last 15 years, especially those put in on the main line.

Col. H. S. Haines, general manager of the "Plant" lines, writes:

I have the disposition and I wish I had the time to express my views at length on this subject; they would not be very technical, either. I started out years ago with that end of the investigation, and the further I have gone the less occasion I have found for applying my information either chemically or mathematically to the determination of the qualifications of a good steel rail; or, to put it in a different way, to find out in advance the best rail for our purposes, and to know when we have got it. Of late years the impression has been growing on me that the designers and manufacturers will have to specialize in this branch of railroad engineering, as has been found necessary in other branches. That is to say, that what is wanted in the way of a rail for a rock-ballasted road is not what we want in our territory, where, for instance, in 1000 miles of road in our system there is not one mile of rock or gravel ballast or any probability of obtaining it. When we first began to use steel rail, its cost being so excessive as compared with iron rails led us to use a light section—that is, 50-pound. As our equipment and trainloads increased in weight, we have replaced it in a great measure with a 60-pound section. On taking up the 50-pound rail, we found them bowed at each end, as if the base had become lengthened under the rolling of the trains, and yet very little wear on the heads. For instance, in taking up a number of rails near Savannah, where our traffic was the heaviest and where they had been down 10 years, we found a loss by wear of about 3 pounds per rail of 30 feet. This may be accounted for by our exceptionally low gradients and long tangents, but it is a fact, or at least we consider it one, that the trouble with us is not the wear of the head, but the bending upward of the rails at the ends, which would seem to show that rock ballast will wear off the head of a rail faster than it would wear on an unballasted road, and that in designing a heavier section for our sandy road-beds, we do not need so much metal in the head of the rail, but we must seek to make the rail higher and perhaps broader. With that end in view we have recently designed a section of a 70-pound pattern, 5 inches high and with a base of 5 inches, using the same metal in the head that we now use in our 60-pound rail—that is to say, we are providing for increased stiffness and not for increased wear.

### A Western engineer says:

For physical test of rails the Pennsylvania Railroad specification seems to be in the right direction; as to the chemical test I am not prepared to say. The question of the constituent properties of rails is still in doubt. The conditions under which rails are used, laid in track and taken care of vary so much on different roads, and the experience is so different that the matter has scarcely received sufficient attention for any one to say just what is the proper make-up for rails.

Another Western engineer, who is much more than commonly well informed, writes:

I think the drop test for rails a good one, so far, that while it does not prove that a rail is a good one, it does indicate what are worthless ones—that is, those that are quite too brittle to be safely laid in track, and I think the same may be said of chemical analysis of rails. It may show whether a rail contains too high a proportion of an element which is well known to be injurious to the metal, without, however, showing just what proportion of elements constitute a good rail. Our analyses of rails so far have not been very satisfactory, but from the work in that line which we now have in progress, we hope to obtain some valuable results. I would attach more importance to physical tests than to chemical analysis, and perhaps more important than either would be a study of the mechanical treatment of the metal in the manufacture of the rail. Our company prescribe neither physical nor chemical tests in their specifications, but take their rails on the guarantee plan.

I think there has been somewhat of an improvement in the wearing qualities of rails made within the last two or three years, though not yet up to the standard of 10 or 12 years ago. One reason for the failure of rails of recent manufacture is the excessive weight per car wheel which is brought upon them; while old rails which have become "case hardened," so to speak, under lighter rolling-stock are better able to stand the crushing force of the present heavily weighted wheels. An engineer, who has had large experience with English rails, finds those made now much inferior to lighter rails made a dozen years ago. This has been true for several years, and many rails have been taken out of track after 18 months' service. They failed chiefly from flattening at the points. The rails are too soft.



## A Canadian engineer writes:

I have almost reached the conclusion that the inspection of rails is a useless service, as, under the same specifications and the same inspector, and, I may add, under the same contract, one delivery of rails may turn out hard and brittle, while another delivery may prove to be as soft as lead. My belief is that under the present process of manufacture the makers are unable to insure a specific quality of rail.

Mr. E. P. Hannaford, Chief Engineer Grand Trunk Railway, writes:

First let us look at the position of the manufactures now and as existing some 18 years ago, when steel rails were first introduced on this continent as a system. In 1870 the engineers of railway companies accepted steel rails on the good faith of the manufacturers, with some misgivings and anxiety, it is true; but in those days railway engineers knew but little of the manufacture of steel rails, and, as a rule, everything was left to the good faith and integrity of the manufacturer, and in some cases a guarantee for a term of years was given. The imported English rails of early years, from 1870 to 1875, gave satisfaction; their wearing life under a heavy traffic was put down at 15 years, and time and service have proved their durability to be equal to the anticipation. Even up to the year 1880 the imported English rails were good in quality, although not so good as during the first five years.

From 1880 to the present time there has been a gradual falling off year by year in the wearing quality of imported rails, until their life

1870 to 1875 will outlast in wear and time two-fold rails made by the same makers ten years later.

Now, inasmuch as railmakers of early years under the Bessemer process know all about the cause of the decrease in wearing ability, I approach the point of endeavoring to set them right, with a great deal of diffidence in my ability to do so. It seems to me very much like a patient prescribing for himself and the doctor looking on with placidity, well knowing that he (the doctor) is master of the position. Having given you the task that railway engineers have before them, I will give you what I consider about the best constituent parts for a 65-pound rail, gathered from the reports of the composition of rails that have given good and bad results, bearing in mind I do not run the laboratory:

Carbon..... 0.40 | Manganese.. 1.10 to 1.20  
Silicon..... 0.06 | Phosphorus.. 0.07  
And by increasing the weight of rails, say, to 75 or 80 pounds per yard, the carbon may be increased to 0.50 to 0.55.

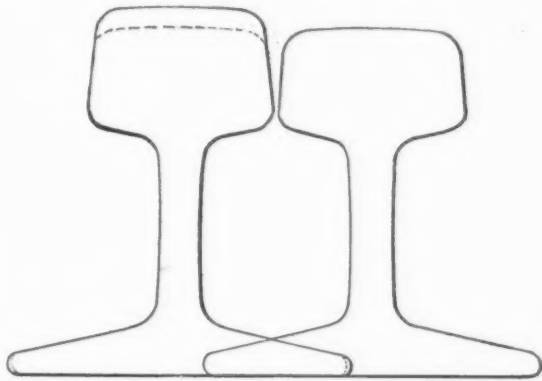
Now, as to the falling weight test. I am not a believer in such, aptly called "barbarous," usages as have been sometimes practiced. The great object to arrive at is the toughness of steel at its maximum of hardness. A weight of 2000 pounds from 18 to 30 feet, two or more blows applied will test this; and if the material is tough, that is sufficient; but if it snaps off then there is the presence of too much phosphorus or sulphur in the ore—i.e., when the above quantities of carbon, silicon and manganese are used; and it must always be remembered that the bulk ore should be chosen with a natural minimum percentage of phosphorus

more information than a drop test. The demand for harder rails which has set in within a comparatively recent period will very likely result in some of our leading railroads establishing a test for hardness.

If I were purchasing for a large railroad I would analyze occasionally. I would want to know that phosphorus and sulphur were within bounds, and that the manufacture was systematic; and yet, after all, we find ourselves unable to tell very much about the value of a rail from the record of its constituents. Within the proper limits for the various elements there is room for very wide differences in the actual qualities of the rail.

There are two objects in inspection—first, to see that the rails are mechanically perfect, and, second, to know that they are made of good steel. The first is easily accomplished by a man having such experience as has usually been acquired by the ordinary inspector. To be of much value in the direction of the second requirement, the inspector should be thoroughly familiar with every stage of the manufacture, and conversant with the various conditions that affect the ultimate condition of the steel. To such a man the ordinary physical and chemical tests are useful only as an occasional check.

I believe the average output to be more uniform in quality than formerly. With some mills I know this to be the case. While much has yet to be learned, the years have brought their lessons, and the various processes are now under better control. I think, also, that most of the mills are now turning out harder rails than they were, perhaps, one year ago. Of course such steel will show higher resistance under test. Whether it will be more liable to breakage in the track remains to be seen. There is some danger in going too far in this direction with the light sections generally used.



The Rail Head Described by J. D. Hawks, Chief Engineer Michigan Central.

cannot be depended upon with any certainty. The same experience is applicable to rails made in the United States—the earlier made rails are better than those of more recent years. This falling off in the quality of steel rails has led railway engineers to study the component parts of the rails, with a view of helping the manufacturers in their endeavors to turn out good wearing rails.

Now, why are the rails of late years inferior in quality to those of earlier years? The answer is to be found in the demand for rails increasing the competition, and in turn decreasing the price. Thus, rails in 1880 to 1885 at the mills' mouth, in England, worth from \$80 to \$50 per ton, and in the United States States from \$115 to \$80 per ton, are now down to \$20 in England and \$30 in the United States. It is useless for railmakers to say that the same ore is used and the same care in manufacturing Bessemer-steel rails is exercised now as in previous years, because facts prove the contrary. The falling wear of rails of recent years' make is evidence against such assertions.

The manufacturer who was in business in the early years knows all about the reasons of the falling away in quality, but he cannot restore the lost elements of wear. The enormous demand and output exacts his attention, and the competition in price precludes his reverting to what are termed the old-fashioned methods of 20 years ago; but, nevertheless, these original makers know all about it, and the why and wherefore rails are not so good in lasting powers as at their first introduction. Some of the makers have said: "True, the rails of early years were well; they were hard; so hard that they caused accidents by breakages, which now happily are almost unknown." Not so. Rails did not break more in the early years than those in later years; but the fact is that the rails of late years are not nearly so good as those of earlier date. And my experience goes to show that rails made by the same maker in

and sulphur, and that if ores are used with a natural high percentage of phosphorus and sulphur, then the extraction or reduction of these injurious elements has to be done by what is known as the "basic process," and a good rail cannot be relied upon.

I cannot divest myself of the feeling that much of the failure of latter years is the result of using ores inferior to what were used when Bessemer rails were first introduced, and in closing I desire again to say that while we maintenance engineers can give railmakers results, yet we are only secondary to them in knowing how to overcome the cause of failures. All the engineers' prescriptions and rail inspectors' elaborate reports will not, in my opinion, secure wearing service equal to rails made 15 and 20 years ago. I believe that railmakers are desirous of making good rails, but the market price and tonnage output limits these conditions, and that if a railmaker turns out rails as good as those from his neighbor's mill it satisfies his conscience, and, if they are not as good, then the railway engineer or inspector will possibly come in for a good share of the failure as participating in manipulating the ingredients making up the rails, and the more the patient interferes with the doctor the worse in my opinion it may be for him. Let us look at net results, the doctor to effect the cure or blame him for incompetency.

Mr. W. F. Mattes, chief engineer and manager West Superior Iron and Steel Company, writes:

Physical tests upon specimens cut or forged from pieces of the rail, or forged from sample castings of the heat, have little or no value. The drop test undoubtedly gives some indication of the toughness and safety of the rail, but throws little light upon its wearing qualities. I am inclined to think that a torsional test upon specimens several feet long, recorded by a large Thurston machine, would give much

Our contemporary *Industry* states that Mr. John Heald, proprietor of the machine works at Crockett, Cal., has discovered that rust may be prevented by painting the work with turpentine and white lead. "It is found that when surfaces are coated with finely ground lead thinned with spirits of turpentine no corrosive action or scaling takes place, even when heavy coats of paint are afterward put on the outside. Mr. Heald says that common paint mixed with oil is too thick to penetrate or close the imperfections of the surface and penetrate beneath the scale where it exists, thus leaving places for corrosion to begin beneath the paint. With turpentine and white lead mixed thin the very pores of the iron are closed. The interstices, to so call them, are too minute to receive the body which oil gives, but are closed by the thinner compound. This is the theory, but that is a matter of no consequence so long as the fact is known."

From the New Castle (Pa.) *Guardian* of the 14th inst. we take the following information: "A series of experiments were tried at the Etna Iron Works, this city, Monday, in the manufacture of steel spikes. The object is to make a finished article by rolling the bar so that its width will be the length of a spike and in such a shape that the spikes may be cut from it with shears, pretty much as a cut nail is made, except that the head is formed in the rolling process. The rolls were turned by Charles & James Mathews, of this city, and were set and operated under the direction of Mr. R. Garvin and Superintendent T. M. Sweeney. At noon the first test was made by running through some steel rails that had been slowly heated for two and a half hours. The result was fairly successful, and it is thought that a few changes in the rolls will make the operation entirely satisfactory."

The freight rates from Pittsburgh to all Texas common points have been advanced and took effect on the 20th inst. The new rates are as follows: First class, \$1.63; second, \$1.42; third, \$1.21; fourth, \$1.06; fifth, 85 cents. Class A, 91; B, 82; C, 72; D, 58; E, 50 cents per 100 pounds. Iron and wire are in carloads fifth class.

**Coal Distributer.**

This machine was designed by Richard Ramsay, superintendent of the Braceville (Ill.) Coal Company, to facilitate the loading of coal or other material into box cars.

exports for the year ending 31st January last amounted to £634,773, against £883,084 for 1887. These figures, however, include the district of Lincoln and Barnsley, which do not concern Sheffield productions. The exports of steel during 1888 amounted to

an immense diminution having taken place in the gross value of steel exported from English steel centers to the United States. The point is that while the competitors of Sheffield in other districts have gradually lost their business, the old steel capital not

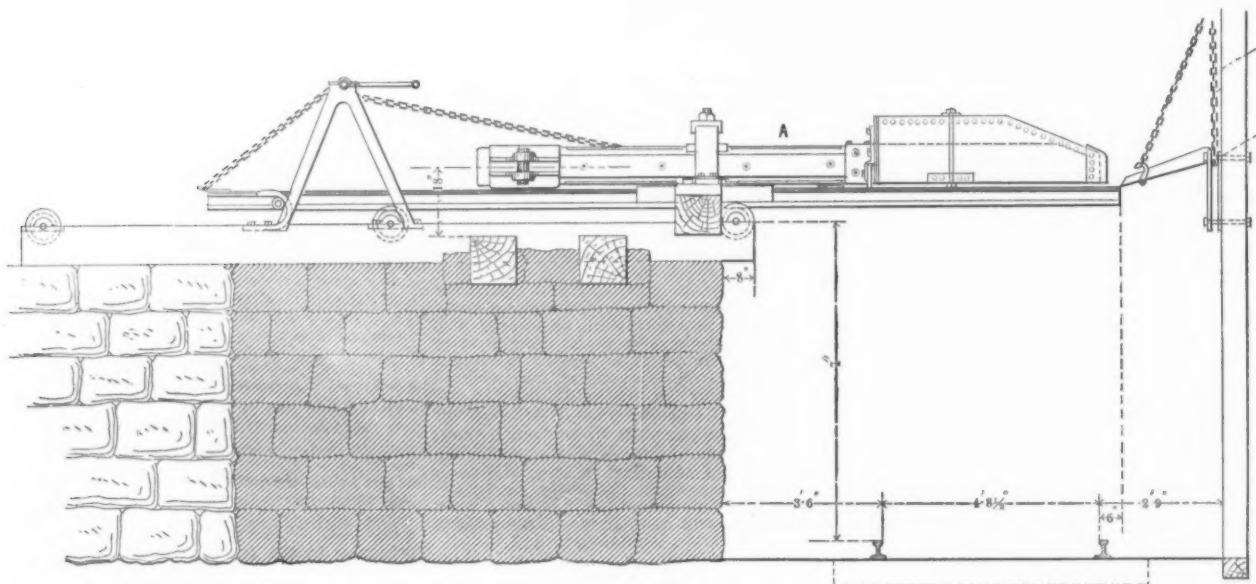


Fig. 2.—Cross-Sectional Elevation.

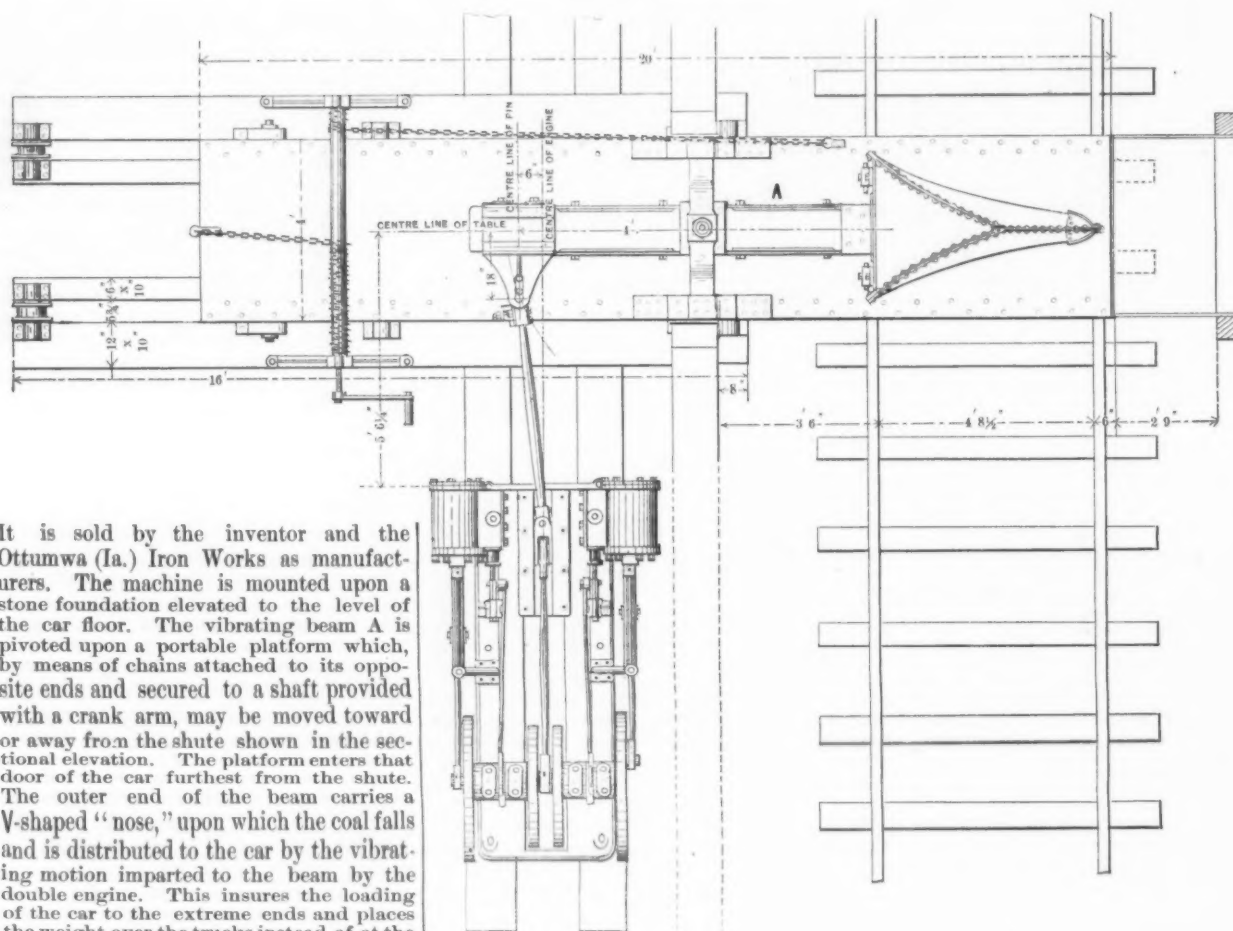


Fig. 1.—Plan.

It is sold by the inventor and the Ottumwa (Ia.) Iron Works as manufacturers. The machine is mounted upon a stone foundation elevated to the level of the car floor. The vibrating beam A is pivoted upon a portable platform which, by means of chains attached to its opposite ends and secured to a shaft provided with a crank arm, may be moved toward or away from the chute shown in the sectional elevation. The platform enters that door of the car furthest from the chute. The outer end of the beam carries a V-shaped "nose," upon which the coal falls and is distributed to the car by the vibrating motion imparted to the beam by the double engine. This insures the loading of the car to the extreme ends and places the weight over the trucks instead of at the center of the car. When the car is loaded the platform is withdrawn to give place to an empty one. It is claimed that this machine will load box cars as rapidly as it will flats, and that its use increases the capacity of the shaft or slope without increasing the number of shutes or scales. It is further stated that it does not break the coal as much as dumping into the car and then shoveling back, and that it thoroughly mixes the fine with the coarse coal.

Sheffield trade with the United States in steel and cutlery shows a slight increase in 1888 over the preceding year. The total

THE RAMSAY COAL DISTRIBUTER, BUILT BY THE OTTUMWA IRON WORKS, OTTUMWA, IA.

£319,118, and cutlery £215,569, as compared with £312,210 in steel, and £211,832 in cutlery for 1887. It will thus be seen that the increase is in the two Sheffield leading specialties, steel and cutlery. This is particularly gratifying as regards steel,

only retains its pre-eminence, but is even doing more work. The secret of the falling off in steel, says the *Engineer*, from which we quote, is undoubtedly the improvement the Americans themselves have made in their own productions, and it is



not improbable that the time will come when they may be able altogether to dispense with supplies even of the finest tool steel, which they now get from Sheffield.

### Portable Power Drill.

This drill can be readily and firmly held to the work and will drill in any position, at any angle and at any direction from the power. The construction of the drill is clearly shown in both the accompanying engravings. The larger, or driving gear, is operated by a grooved pulley, with which a clutch is adapted to engage to operate the small or feed gear. The feed is automatic and sufficiently powerful to stand the greatest strain a twist drill can be subjected to. At the base of the drill is a threaded hollow stud for securing the machine to the brace, or jig, after the latter has been properly adjusted for the hole to be drilled. The illustrations show the method of holding the drill to the work by means of the jig and dog. It is evident that with jigs of suitable form the drill

the non-Bessemer ores. From my own notes I am not able to furnish many complete analyses, such being seldom required of me, but I subjoin two which may serve to show the character of the two classes.

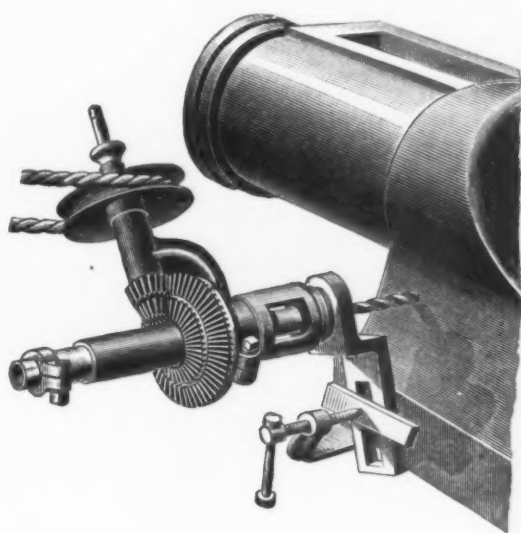
#### Analyses of Roasted Ores.

	Bessemer.	Non-Bessemer.
	I.	II.
Silica.....	9.20	17.18
Carbonic acid and water.....	.55	undet.
Iron } FeO... 2.85	Bisulphide iron 1.47	
oxide } Fe <sub>2</sub> O <sub>3</sub> ... 63.03		65.73
Alumina.....	2.19	3.02
Lime.....	6.80	4.35
Magnesia.....	7.13	5.72
Oxide of manganese.....	3.90	2.66
Phosphoric acid... .102		.319
Sulphur.....	1.788	....
Oxygen with sulphur.....	1.58	....
	99.12	100.449
Metallic iron.....	46.34	46.70
Phosphorus.....	.044	.139
Sulphur.....	....	.786

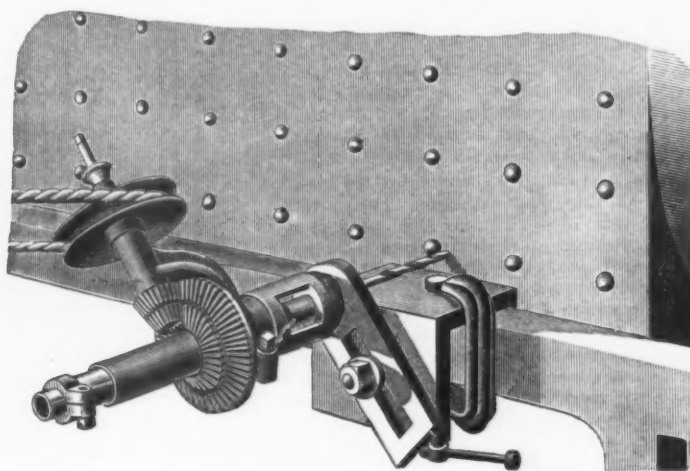
The ore always contains a considerable amount of water—sometimes, when it has

in color, very hard, has a glazed surface, from which the hammer rebounds sharply, and occurs in lumps the size of a man's head, attached to other clinkers, but plainly of separate nature. In the mortar it yields a yellowish powder, separable by the magnet into a yellow-gray earth and a sharp, black, glittering sand. The earth contains about 42 per cent. of metallic iron. The black sand contains about 53 per cent. of metallic iron.

Another clinker is apparently also from a single ore lump, but has no evidences of fusion, no glazed exterior, and retains its original form. It is very hard and heavy, presents a glistening black fracture with evidence of sulphur, and often contains 60 per cent. of metallic iron. Another resembles a slag-finger seen at the tuyere of a chilling furnace, or an ore-stalactite formed on the bottom of something and then broken off. These I have occasionally seen forming at the kiln-gates, the fused matter trickling down the wall when the kiln was "in trouble," a condition corresponding to a scaffolding furnace.



Drilling Engine Bed.



Drilling Locomotive Fire Boxes.

PORTABLE POWER DRILL, MADE BY J. J. McCABE, NEW YORK.

may be held in almost any desired position. These drills are manufactured by J. J. McCabe, of 121 Liberty street, New York.

### Roasting Hudson River Carbonates.\*

BY INGERSOLL OLMSTED, BURDEN, N. Y.

The Hudson River carbonate ores are of two classes, Bessemer and non-Bessemer, existing in separate, though adjoining beds. Both are carbonates, with small admixtures of oxides and other combinations. To prepare them for market they are roasted in kilns 60 feet in height. They have wrought-iron shells 24 feet in diameter; are lined with fire-brick, and supported by cast-iron mantel and columns. As originally built, the draft was wholly from the bottom; but afterward two rows of small circular holes were cut in them, a little short of half way up, and encircling the kila. The kilns are 10 in number, with an estimated roasting capacity of about 100 tons daily each.

The richer of the two classes of ore is a true Bessemer, containing only about 0.035 per cent. of phosphorus. It is uniform in character and unmarked by any specially interesting features. In the present paper I purpose to speak mainly of

been exposed to rain, as much as 8 per cent. It is but fair to say that the sulphur in I is much higher than the average, and that the iron in II is a trifle higher than I have generally found. The form of the roasted ore is varied, but examination shows four main characteristics, which may be classified thus:

- I. A rough, shapeless mass.
- II. A fine-grained, flat slate.
- III. A mixture of white silica-grains with red or black ore-grains, occurring mainly in thick, flat slabs.
- IV. "Clinkers," so-called.

The analysis of many pieces of each class points to the rough generalization that Nos. I and IV are the richest, the others mostly lean, though stray pieces of one class occasionally approach those of another so closely in percentage of iron that the line becomes hard to draw.

Class IV presents the most interesting features. For some reason not yet clear, these clinkers form in the kilns, and, descending to the gates, give trouble by being too large to pass through, and requiring blasting. They are, in the main, roughly rounded masses, from 18 inches to 3 feet in diameter, composed of pieces of ore, rock, coal ashes, &c., cemented together with fused ore or something similar. But there are many of a different nature. One appears as though formed from a single ore lump; it is nearly gray

A prominent characteristic of the "cemented" clinkers is that they often contain pieces of Class III; but such pieces show no evidences of fusion or alteration, and are only stuck to the rest of the mass. In spite of close study with a magnifying glass I have not been able to connect any other particular form of ore—the slate, for example—with this clinker formation, nor have I ever seen any fused or altered rock. Moreover, the lumps of ore never seem to show the beginning of fusion arrested there. All these facts point to complete change taking place in one kind of ore.

The reason for this clinker formation remains an open question. Too much heat has been the cause commonly assigned; but that of itself would not produce the metallic iron visible in them. To test the action of heat upon the ore I placed some, in inch-cube size, mixed with coal, in a Hessian crucible, and exposed it to the full heat of a gasoline furnace, keeping the crucible at an almost white heat for hours, but failed to produce any effect except thorough roasting—this, too, although I varied the conditions, with crucible open and closed, by charging wet ore and coal-dust, &c.

I then considered that there must be some action of oxidizing and reducing gases at the bottom of the trouble; that it might be promoted by the ore remaining longer in or near the fires than is necessary

\* A paper read at the Buffalo meeting of the American Institute of Mining engineers.

to completely roast it. This might easily happen, since the drawing of the kilns is regulated by the appearance of hot ore at the gates, the convenience of shipment and other causes, not by the time necessary to roast. I do not know that that length of time has ever been precisely determined here. Clinkering might also arise, I thought, from some of the ore fusing or reducing more easily than the rest, and thus running in the fire necessary to roast the more refractory.

In our non-Bessemer vein there occur constantly seams of black slate, generally narrow. It is very siliceous, fine-grained, nearly black between the gray natural ore, breaks into thin plates, and furnishes my Class II. Besides its carbonate of iron it carries from 1 to 15 per cent. of some other iron combination, insoluble in concentrated boiling acid. May not this fuse readily, and, under some conditions, cause trouble? To follow up the investigation on this line I designed a special apparatus for roasting samples in the presence of different mixtures of oxidizing and reducing gases, but have not been able as yet to carry on the experiment. It is on this point that I invite discussion—namely, the reason for the formation of clinkers described. Perhaps I ought to add that our fuel is good culm, and the charge fixed by practice as best is about 1 ton of fuel to 30 of ore.

At certain times these clinkers form in large numbers and virtually scaffold the kiln, which decreases its output, becomes hot throughout, and is said to be "in trouble." Then they are termed "bad" clinkers, and are thrown out on account of the sulphur they contain. The average of this objectionable element in the ore, including clinkers, is from 0.70 to 0.90 per cent.; but the clinkers alone usually show over 2 per cent. Now, the question which I wish specially to recommend to the attention of furnace men is, What effect will charging these masses among our friable and easily reducible ores have upon the furnace and its work? Would they need more exposure to the reducing gases than the porous ore, and thus, while descending low in the furnace while yet partially unreduced, cause irregularity of working? Would it be advisable to reject them, supposing them to constitute a small portion of the ore only?

The sulphur in our roasted ore has generally been supposed to exist as sulphuric oxide. I think Mr. Sherrerd, of Scranton, holds this view. It is also said to roast off in the furnace and not to affect the iron. Now, would this hold true of the clinkers? Is not the sulphur more likely to be in them as pyrites, and, in such hard masses, to descend into the zone of fusion? I regret that it is impossible to give any complete analyses of these clinkers, which might aid much in the solution of such questions. I have only a few fragmentary tests for iron and silica, which do not show anything.

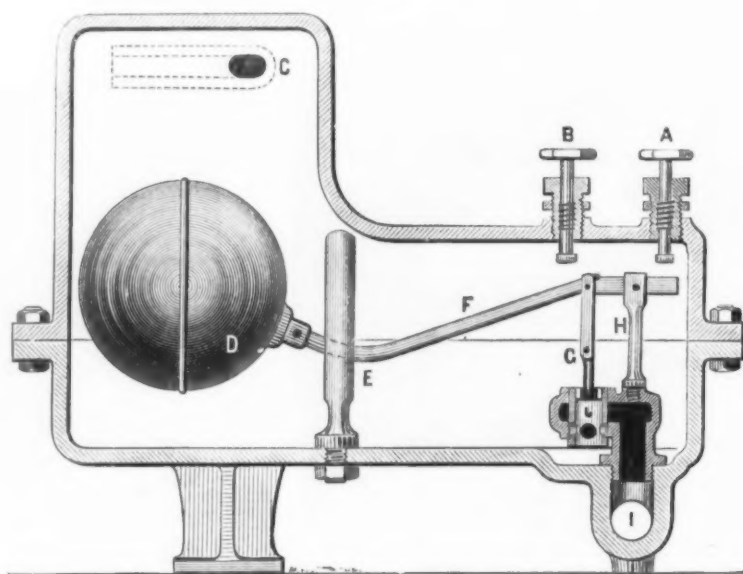
Apparently, the ore was designed to confound many pet blast furnace theories. For instance, I was once told that it would not make a large percentage of No. 1 or No. 2 iron, because of its manganese (2 to 4 per cent. of the black oxide) and sulphur; but since then I have seen a furnace, running on this non-Bessemer ore alone, make nothing but No. 1 iron for days together. In that iron I found from 1.75 to 2.25 per cent. metallic manganese and only a trace of sulphur. The iron, when raw, was covered with the cloud of sparks, which ordinarily accompanies cold iron, and the slag had a chocolate-colored or nearly black surface, yet contained, nevertheless, only a trace of iron. The fumes at casting were remarkably dense and sulphurous, and I more once noticed in them the odor of cyanides. The iron made exceptionally good castings, and pleased the foundrymen very much.

The variety in appearance and in composition of the samples of this non-Bessemer ore is very striking. Upon my table lie upward of 100 lumps, all tested and tagged, with the percentage of iron at least, often with that of silica and manganese. The silica in many is plainly visible to the eye in pure white grains scattered through the mass, or in narrow veins which under the action of fire become brittle and split the mass throughout, leaving the white crystals upon one face. In others, as in the black slate, the silica is entirely in combination. The percentage of iron varies from 7 to 56, though even to the trained eye there is very little difference in appearance. Some contain so much lime that on mere exposure to the atmosphere they have slacked into a heap of dust, though they carried over 40 per cent. metallic iron. These peculiarities have occasioned much trouble with our customers, and complaints of rock, dust, careless preparation, &c., from those who are ignorant of the originally mixed condition of the ore in the vein, and the confusion unavoidably resulting from the

The experiment has been well confirmed, and seems to show that our leaner, more siliceous, non-Bessemer ore really consists of a mixture of rich ore with veins and lumps of lean, phosphatic stuff. There is no such difference visible in the natural ore, nor do the tests of diamond drill cores and daily drill-samples from the mines encourage the belief. I am, nevertheless, inclined to cling to the theory, in part at least, and to consider the other disagreeing results to arise from the intimacy of the mixture, rendering a drill-core witness only as to the ore it actually contains.

#### A New Steam Trap.

The steam trap invented by George W. Baird, of the engineer corps of the U. S. Navy, is being manufactured by Watson & McDaniel, of Philadelphia. It was designed to work with the Baird distillery apparatus, and several are being fitted to the fresh-water distillers on board the new cruisers Yorktown, Charleston, Concord, &c. The water from the heaters enters the



NEW STEAM TRAP, MADE BY WATSON & McDANIEL, OF PHILADELPHIA.

roasting and consequent alteration of form. A knowledge of them, together with a laboratory accident, led me to make the following experiment:

A large sample of non-Bessemer ore was reduced to a coarse powder, divided into halves, and these marked respectively Nos. I and II. No. I, without any further preparation, was passed over a 60-inch sieve, and the resulting powder marked A, the fine ore, tailings, &c., being marked B. No. II and A and B were then carefully sampled and analyzed, with the following results:

	II.	A.	B.
Iron.....	39.06	44.51	37.70
Silica.....	23.95	18.40	27.
Phosphorus.....	0.201	0.120	0.270

A partial repetition of the experiment, the analysis of II being omitted, gave:

	A.	B.
Iron.....	43.05	36.92
Silica.....	20.53	29.53
Phosphorus.....	0.102	0.183

The samples originally taken did not fairly represent the ore, being leaner than the average; but this did not defeat my intention, which was to learn whether a richer separated ore could be obtained by such screening. If, as my experience goes to show, the soft ore is the rich and desirable, then the difference would have been more marked had the proper proportion of rich ore existed in the samples.

trap through the opening C. In the chamber is the spherical copper float D, which is mounted upon the lever F, fulcrumed to the post H. As the water enters the trap, the rising float opens the valve J, by means of the rod G, enough to bring the portholes in it opposite the holes in the cylindrical case in which the valve works, when the water flows out through the passage I. By turning the valve-wheel A the lever may be raised and the valve opened by hand. Turning the valve-wheel B will close the valve. These wheels are intended only to be used in case the valve J sticks or becomes clogged. It is evident that this trap will operate as freely at one pressure as another. The trap cannot be flooded, as the piston openings are equal to the inlet and discharge pipes. There is an opening in the end of the trap, by which it can be connected direct to the waste-pipe, so as to blow all sediment from the bottom. A board of United States naval engineers examined the trap on the Albatross, and in recommending its use on naval vessels said: "The advantages are the employment of a piston valve perfectly balanced for the discharge, certainty of action, small space occupied, cheapness, lightness, it is automatic, has a large opening for discharge, and can be shut off or blown through by means of the hand attachment on the piston valve."

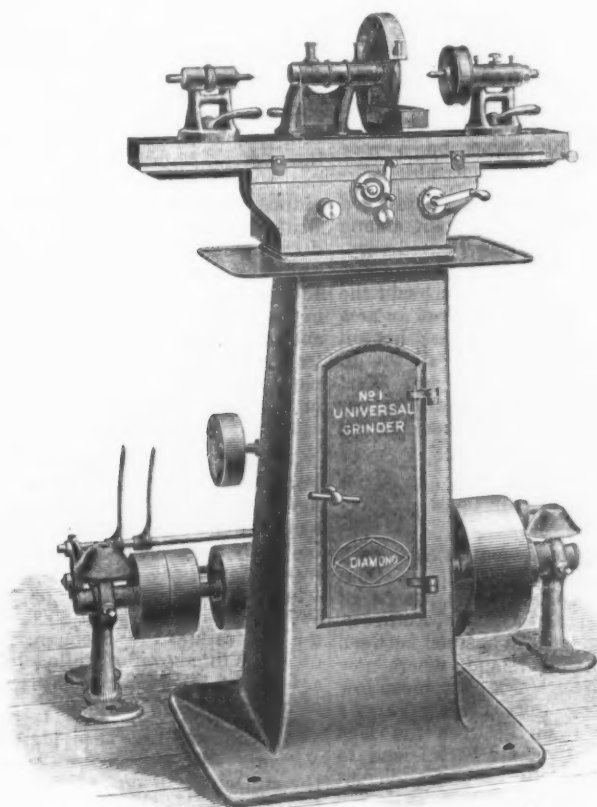


### Universal Grinding Machine.

The machine illustrated is designed for grinding light work, straight or taper, soft or hardened spindles, arbors, cutters, reamers, &c., and also for grinding out rings and hardened boxes by means of a special chuck. The table has both automatic and hand feed, the change being made from one to the other by simply turning a knurled handle in front of the machine. The work can be revolved upon dead center or otherwise, and the wheel is brought to and from the work by means of a screw and hand-wheel, and is arranged to use water to prevent drawing the temper on hardened work. The machine has a swing of 8 inches in diameter by 16 inches long, but is not designed to grind work as large in diameter and length as the capacity given. It is the smallest of

posed for two or three minutes to the action of the vapors of the heated mixture of hydrochloric acid and nitric acid in equal portions, at a temperature ranging from 550 to 650° F. After the objects have cooled, they are to be rubbed over with vaseline and again heated until the vaseline begins to decompose. This treatment with the vaseline has to be repeated once. Should a lighter coloring than bronze be desired it can be produced by mixing acetic acid with the other acids.

Some interesting information respecting the jade of Burmah is contained in an Indian Blue Book, lately received from Rangoon. The jade mining district is a large tract of country, chiefly on the west side of the Uyu River. The Kachins, though acknowledging Burmese authority, regard themselves as owners of the mines. The



UNIVERSAL GRINDING MACHINE, BUILT BY THE DIAMOND MACHINE COMPANY, OF PROVIDENCE, R. I.

the machines made by this company for this class of work. The Diamond Machine Company, of Providence, R. I., the manufacturers of this machine, have a Western office at 51 South Canal street, Chicago, Ill.

Proposals have been invited by the Secretary of the Navy for the construction by contract of an armored coast defense vessel of about 4000 tons displacement, complete, exclusive of armament. Bids will be opened at the Navy Department at noon on February 20, 1889. The material used in the construction of the vessel is to be of American production and furnished and manufactured in the United States. The armor, armor bolts and the accessories are to be furnished by the Government, and the contractor is to fix, place and secure the armor to the vessel.

A German technical journal gives the following method of producing a bronze-like surface on iron or steel, which prevents rust: The object to be acted upon must be cleaned so as to take off all oxidation or other impurity. It is then ex-

jade is sold chiefly to the Chinese, the headquarters of the trade being at Mogung. The best quarries in recent years have been those of Hsimu, Masa, Mopang and Tamukan. It appears that Burmah is the only source whence the Chinese draw their supply of this highly prized mineral. The Chinese Lun Pein, to whom the British Government had farmed the jade-tax, was assassinated a few months ago in consequence of his unpopularity.

The Navy Department, Washington, D. C., will receive proposals until 12 noon, on Friday, the 15th day of February, 1889, for constructing and furnishing the machinery, including engines, boilers and appurtenances, required for the United States armored cruiser Maine, and for erecting and connecting the same on board said vessel at the Navy Yard, Brooklyn, N. Y. All the machinery, including engines, boilers, screw propellers, shafting, pumps and all appurtenances, is to be of the best and most modern design, and to be constructed in accordance with the plans and specifications provided or adopted by the

Secretary of the Navy. The engines must have all necessary appliances for working under forced draft.

### The Naval Appropriation.

The only new vessels called for under the new Naval Appropriation bill, apart from four steam tugs, to cost \$140,000 in the aggregate, are the steel monitor of 3000 tons displacement, planned by Representative Thomas, and a second cruiser of the Vesuvius type. For the former the price allowed is \$1,500,000. Her engines are to develop a collective indicated horsepower of 7500 and to produce a maximum trial speed of 17 knots. This is the vessel which has the double interest of novelty in her plan for sinking lower in the water as a means of protection when in actual conflict with an enemy, and in her adoption of a 15-inch 110-ton rifled gun as part of her armament. The maximum appropriation for the second new vessel is larger than that for the Vesuvius, being \$450,000, and this additional margin of \$100,000 will doubtless allow of greater size or more effectiveness in one way or another. The reason for not calling for other new vessels in this bill is doubtless to be found in the fact that there are already several authorized for which the plans have not been prepared. These include two of the most important ships yet proposed, one of them a larger armored cruiser than the Maine, and another a larger a larger unarmored cruiser than any we have, besides the new and fast 2000-ton cruisers.

There has been built at Altoona for Geo. Westinghouse, Jr., a car which will be called the "Instruction Car," designed to exhibit to railroad men the practical workings of all the Westinghouse appliances, consisting of working models of the latest improved air brake for passenger and freight cars, the new friction buffer air signal, steam heating apparatus, electric lighting, and in fact everything pertaining to the mechanical equipment. A 15 horsepower boiler will supply steam to a Westinghouse engine which will operate a dynamo, while a tank with a capacity of 6000 pounds will carry a supply of water under the car.

Invention states that the first instance known of machinery being applied to the making of screws was in France, in 1569, by a man named Besson, who contrived a screw-cutting gauge to be used in a lathe. In 1741 Besson's device was improved by Hindley, a watchmaker of York; and for a long time the watchmakers of England employed the latter's method in making the small screws used in their work. The first English patent appears to have been issued to Job and William Wyatt, in 1760, for three machines—one for making blanks, another for nicking the heads, and a third for cutting the threads. Between that date and 1840 about 10 patents were issued.

The Valley Forge Natural Gas Company are now busy drilling a well for natural gas at Valley Forge, not far from the building known as "Washington's Headquarters." William McCabe, who is performing the work, drilled, so far, about 100 feet. It is reported that strong indications of gas were discovered some time ago when drilling the artesian well for the Hays paper mill.

According to a correspondent of *Industries*, the Russian Minister of Railways proposes asking for a credit of 9,300,000 roubles for the purchase of 300 locomotives. Each engine, according to these figures, will cost over \$23,000. The engines are all to be built in Russia.

## THE WEEK.

The recent decision of the United States Supreme Court in the great patent case of the Bate Refrigerator Company *vs.* Hammond & Co. has had a startling effect on the electric lighting business. It is said that it means the gain of many millions of dollars for the Edison company, owing to the fact that a great number of patents which had been thought to be valueless are now found to be worth large sums.

Hippolyte, who opposes Legitime in Hayti, is reported to have come into possession of two gun-boats, one recently purchased in New York and the other in France. The armament received from New York comprises nine Gatlings, which will be manned by American gunners.

Chancellor Bismarck, in a speech before the Reichstag, 26th inst., declared that both in Samoa and on the East Coast of Africa the Imperial policy is thoroughly in accord with that of Great Britain. Respecting commercial prospects in Zanzibar he regarded the enterprise undertaken by the East African Company as one that must be sustained, in order that Germany utilize the products of her own colonies.

The annual report of the New York State Comptroller states that for the current year the State tax is \$9,089,303, the rate being 2.62 mills and the valuation \$3,469,199,945. In one year the assessed valuation of real estate has increased by \$97,358,296, while the increase of assessed personal property was only \$10,913,472. It is believed there is over \$2,500,000,000 of personal property in the State that is not, but ought to be, taxed. There was invested in capital of corporations organized in this State during the last fiscal year the sum of \$145,470,616, which is more than one-third the entire assessed valuation of personal property within the State.

The American Minister to the Court of St. James, Mr. Phelps, was honored by a remarkable banquet by the Lord Mayor of London prior to his departure for America. So good an authority as Robert Browning said in private talk that he believed it to be one of the most notable assemblages Europe had ever seen. Practically the whole Supreme Bench of England were present, with Lord Chief-Justice Coleridge at their head, and the best representatives of science, art, literature and commerce which the country affords.

It is reported from official circles in Ottawa that more stringent regulations than ever are being arranged for promulgation during the coming fishing season, and the entire fleet of fishery cruisers will make things unpleasant for the Yankee skippers. Orders having gone out for the exclusion of Canadian railway cars from traffic between stations on the American side, annoyance of the skippers will be "tit for tat."

A careful computation of the value of farm products in the United States during the crop year of 1887-88 affords evidence that the money value was in excess of the total realized in the previous year. For grain and cotton alone the gain is supposed to reach nearly \$100,000,000, but the export movement having been retarded to an unusual extent by speculative influences, the total net cash available for expenditures in other lines of industry may be considered yet in reserve.

At a cost of \$2,500,000 the Pullman Palace Car Company have absorbed all rivals, with a single exception, the Wagner Company, which runs cars only on the Vanderbilt roads.

George McKay, deputy State inspector, testifies that he has 17,000 factories to look after, and this statement is made in

extenuation of the fact that at the inquest in the case of the Fifth street factory fire last week it was discovered that the building had no fire escapes. The law regulating this matter had not been enforced, and the question arises which party was most liable to a grand jury indictment, the owner of the building or the inspectors.

The Railroad Commissioners of Minnesota recommend to the Legislature that the "common car stove" should be excluded from all trains.

Over 2000 dwellings have been erected in Pittsburgh within the last year, and prospects are considered better for the year 1889.

City lots in St. Louis valued at \$500,000 have been transferred to the Q road for conversion into railroad yards.

The latest plan for protecting New York harbor is to convert the waters of the bay into an ocean of flame by suddenly releasing a flood of petroleum from submerged iron pipes and applying a match. Somebody pointedly observes that "a vast body of flaming oil sweeping up through the Narrows must be a nice thing for New Yorkers to contemplate."

The resources of Wyoming are destined to make that Territory important among the States of the American Confederacy. Delegate Carey, in a statement before one of the Congressional Committees, said the coal lands in the Territory covered an area of not less than 5,000,000 acres; her oil lands were more than equal to all the oil lands in Pennsylvania, Ohio and West Virginia combined, and she had as fine iron deposits as are found in the United States.

Telephone subscribers are making a demonstration at Albany in favor of reducing charges.

Plans for the improvement of New York harbor have been submitted to Congress by Lieut.-Col. Gillespie, Corps of Engineers, through Secretary Endicott, which contemplate a ship channel between Jersey City and Ellis Island, where now there are only 4 feet of water at mean low stage, except near Port Liberty; also a ship channel or basin between the deep water of Hudson River and Ellis Island, to comprise about 70 acres, and of sufficient capacity to accommodate conveniently 250 vessels at anchor, after allowing an open channel on the north side for convenient communication with the adjacent wharves.

A new tunnel under the Chicago River, to cost \$1,500,000, will be constructed by one of the street railway companies.

The president of the Dock Commissioners explains the delay in carrying out the plans for improving the water front in New York City, arising from difficulty in acquiring and obtaining control of the property of private owners. Until this can be accomplished, private owners are prohibited under the law from improving their property along the water front in accordance with the plans of the commissioners. Simon Stevens, who is attorney for the owners of the greater part of the water front now in private hands, said: "The delay is attributable wholly to the Commissioners of the Sinking Fund and to the city's Law Department. The entire water front of the city is about 60 miles in extent. The title to about one-third of this below Fifty-ninth street still remains in the city. The wharf rights of the other two-thirds have been conveyed by the city to private persons, who now hold them under specific grants. The carrying out of the plans of the Dock Commission involved the demolition of all the existing piers and bulkheads within the prescribed limits, whether public or private, and the building of new ones in their places. In

many cases pending for 13 years no affirmative action has been taken by the Law Department of the city to attain a final decision which would serve as a precedent to govern future action.

The Canadian Pacific and Grand Trunk Railways are reported to have reconciled differences, with the effect of shortening time between Ontario and the Northwest, and they expect to cope more successfully with railways in the United States.

The world's supply of sugar, according to the best authorities, is estimated for the present year at 5,240,000 tons, including 2,808,000 tons of cane and 2,432,000 tons of beet-root sugar. This is an increase of 295,000 tons over the yield of 1887-88, which comprised 2,530,000 tons of cane and 2,415,000 tons of beet-root, thus indicating that the quantity of these two descriptions have changed places in relative importance. The imports into Great Britain last year amounted to 892,518 tons, as compared with 897,760 tons in the previous year, showing a small decrease. Meanwhile, however, a remarkable decrease took place in the relative proportions of cane and beet, the former increasing 134,000 tons and the latter decreasing 139,000 tons as a result of the reduced beet crop in Germany last year. British imports from the United States declined 37,000 tons. The estimated consumption per head in Great Britain is 73 pounds, as compared with 52 pounds in the United States, 28 pounds in France and 20½ pounds in Germany. Russia, Italy and Spain average only about 9 pounds per head. The average per capita in our own country has steadily increased at the rate of nearly 5 per cent. per annum.

Jacob Tome, a millionaire banker of Port Deposit, Maryland, has determined to devote \$2,000,000 or \$3,000,000 to establishing a training institution where poor boys may learn the use of tools and receive instruction in any kind of trade they may select. Workhouses will be erected for 500 children, at a cost of \$500,000. In its general features the scheme resembles that of Mr. Williamson, of Philadelphia, and is a form of practical philanthropy worthy of imitation.

A syndicate has been formed in West Virginia, with ex-Senator Camden among the projectors, to build a railroad on the banks of the Monongahela river, and under an arrangement with the Baltimore and Ohio Railroad Company transport coal and coke to Western markets. The scheme comprises a coal and coke company which will build 500 coke ovens on the line of the railroad. About \$2,000,000 have been raised.

The Florida orange train runs all the year round. After the orange season strawberries, asparagus, garden vegetables, water melons, &c., follow in rotation. If weather permits, ventilators are kept open all the way through.

Italians are now the object of the fierce resentment at first directed against Chinese immigration by representatives of organized labor. The Ford bill in Congress, which imposes a head tax of \$5, is expected to operate as a barrier against the importation of cheap labor from Italy and other parts of Southern Europe, and the steamship companies in the Atlantic trade are much alarmed. Railroad companies, on the contrary, manifest little concern, alleging that even though numerous immigrants destined to the United States might disembark at Canadian ports they would eventually find their way across the boundary. The better class would not be deterred whatever the terms of the bill. Meanwhile excluded laborers of any kind will be welcome in the Argentine Republic to compete with the United States in growing wheat.



## MANUFACTURING.

### Iron and Steel.

Lemont Furnace, formerly operated by R. Hogsett & Co., in Fayette County, Pa., has been torn down and the machinery is being removed to Alabama.

The steel plant of the Glasgow Iron Company, at Pottstown, Pa., has been closed down.

The Bellaire Nail Works, of Bellaire, Ohio, have recently made some very successful experiments in what is known as the direct process. Instead of running the material from the blast furnace into pig beds, it is taken direct to the Bessemer converters in ladles. By this process there is a slight economy in labor at the blast furnace, and also in the steel department, and in addition there is the saving of the fuel required in the cupola. The chief advantage claimed for the process, however, is the superior quality of the steel made, as it is claimed that it contains less sulphur on account of not having to be re-melted, thus avoiding the absorption of sulphur contained in the coke. The greater part of the product of the blast furnace, about 140 tons per day, is now used in the direct process.

Two new double furnaces are being added to the puddling department of the Lochiel Iron and Steel Company, at Logan, Pa.

On Monday, the 21st inst., notices were posted on the plant of the Pottstown Iron Company, at Pottstown, Pa., of a reduction of 25 cents per ton for puddling. This reduction fixes the price at \$3 per ton and affects the puddlers, helpers, rollers and others in that department. The reduction is to go into effect on Monday, the 4th prox. It is thought that it will be accepted by the workmen.

A press dispatch from Philadelphia under date of the 24th inst. says: "The Powell Iron Company was organized to-day to conduct the business of the firm of Robert Hare Powell's Sons & Co., which made an assignment for the benefit of creditors August 29, 1887. At the time of the assignment the insolvent firm owed \$2,000,000, of which \$1,000,000 was unsecured. By the present arrangement the unsecured creditors comprise the new company, whose stock is \$1,000,000.

Sarah Furnace, at Ironton, Ohio, which has been idle for some time undergoing repairs, has again resumed operations.

Wellston Furnace, at Wellston, Jackson County, Ohio, operated under lease by King, Gilbert & Warner, of Columbus, Ohio, has resumed operations after an idleness of some weeks for repairs.

At the annual meeting of the stockholders of the Belmont Nail Company, held in the office of the company at Wheeling, W. Va., on Tuesday, the 22d inst., the old Board of Directors was re-elected as follows: A. W. Kelly, William F. Stifel, Joseph Bell, Edward Reid, George G. Hannan, John G. Hoffman, Jr., and Thomas O'Brien.

A change took place in the membership of the firm of Gabel, Jones & Gabel, of Pottstown, proprietors of the Gabel mine, at Boyertown, and lessees of the Norway furnace at Bechtelsville, Berks County, Pa., on the 1st of January, 1889. The interest of the late Major Griffith Jones, deceased, has been transferred to the heirs of his estate, Mrs. J. C. Jones, Miss Jennie Jones and Capt. F. B. Jones, and Messrs. Henry H. and Jacob H. Gabel continue their ownership as before. Mr. George C. Davis is superintendent of the mines and furnace.

Last week the lining in two of the stacks of the Eliza furnaces, owned and operated

by Laughlin & Co., at Pittsburgh, fell in, and it was necessary to blow out both for relining, which will be done as soon as possible, when they will be started again. This leaves one stack still in operation and one building by this firm. When the new furnace will be completed, which will be about May next, the two stacks mentioned above will probably be dismantled, as the new furnace will have a larger capacity than both of the old furnaces combined.

At the annual meeting of the stockholders of the Benwood Iron Works, held at Wheeling, W. Va., the old board of directors were re-elected, as follows: John G. Hoffman, Sr., A. W. Campbell, L. S. Delaplaine, G. B. Caldwell, L. S. Stifel, Jacob Wise and E. W. Paxton.

A press dispatch from Steubenville, Ohio, under date of the 21st inst., says: "When the Cartwright Iron Works failed last June there were preferred labor claims of about \$3500, which Assignee T. P. Spencer to-day paid in full. The general creditors, to which is owing about \$50,000, will receive nothing from the assets of the concern. The old plant is being rapidly converted into an extensive muck iron mill."

The plant of the Keystone Iron Works, Limited, at Reading, Pa., which has been idle for some time, resumed operations on the 21st inst., giving employment to 90 men.

The Reading Iron Works, at Reading, entered for record on January 4 a mortgage for \$600,000 to the Pennsylvania Company for Insurance on Lives and Granting Annuities, of Philadelphia. This mortgage is to take the place of one for \$1,000,000, executed in 1874 to the American Life Insurance Company, made payable in 15 years. Four hundred thousand dollars of the amount was paid out of the sinking fund of the company and the remainder by the proceeds of the new mortgage. Besides thus reducing its indebtedness, the corporation during the last two years have made extensions and improvements costing several hundred thousand dollars.

Morris, Williams & Bailey, manufacturers of cold-rolled steel at Pittsburgh, have recently embarked in the manufacture of finer articles. They are now building up a larger trade in steel for sewing-machine attachments, springs and general stamping purposes. They have finished steel for watch-springs, and are now making a specialty of springs for clocks. They recently booked an order for 25 tons of steel, to be used in making air chambers for dynamite guns.

Moorhead Bro. & Co., proprietors of the Vesuvius Iron and Nail Works, at Pittsburgh, are now preparing to build an entirely new puddling department of 20 double puddling furnaces, and also a new three-high muck train. It is also stated that the company will manufacture fuel gas, having decided to abandon the use of natural gas as soon as their present contract expires.

Huston & Sons' new steel mill, at Coatesville, Pa., is being rapidly pushed to completion. Mr. Kurtz, who recently purchased the Valley Iron Works, has given the contract for a large new iron mill. Craig, Ridgway & Son, founders and machinists, who now have the largest foundry in that part of the State, will enlarge their works in the spring. The large Brandywine Iron Works, owned by Worth Brothers, will soon be in full operation.

At the annual meeting of the stockholders of the Cleveland Rolling Mill Company, of Cleveland, Ohio, held on Wednesday, the 23d inst., the following officers were elected: President, William Chisholm;

vice-president, W. B. Chisholm; secretary, E. S. Page. Directors, J. H. Wade, H. B. Payne, William Chisholm, J. H. Wade, Jr., and W. B. Chisholm.

Mr. S. T. Wellman has resigned his position as superintendent of the plant of the Otis Iron and Steel Company, of Cleveland, Ohio, and will shortly make an extended pleasure trip to California.

Large quantities of machinery for Claus Spreckels's great sugar refinery, in Philadelphia, are being placed in position. Altogether 800 men are employed in the work.

The Chicago Forge and Bolt Company have secured a very good contract for iron bridges for the St. Louis and San Francisco Railroad. Forty spans will be required, involving the consumption of about 1200 tons of material. The company report a very satisfactory outlook for their bridge department, but the demand for axles and other iron work for cars is quite light at present.

The Nashville Iron, Steel and Charcoal Company, located in West Nashville, made an assignment 23d inst. to Robert L. Morris for the benefit of creditors. Though not fully set forth in figures, the assets are claimed by officials of the company to be about \$450,000, and the liabilities \$170,000. Among the assets are reckoned accounts due the company amounting to \$38,882.31.

### Machinery.

The Bouton Foundry Company, of Chicago, some time since sold the site of their Archer avenue works to the Chicago, Alton and St. Louis Railroad Company, who needed the ground for other purposes. The ownership of the buildings and machinery remained with the foundry company, who were given a reasonable time to finish their contracts and effect a removal to some other site. Since then important changes have taken place in this company. E. G. Shumway and C. D. Bradley bought out F. W. Barker, and subsequently Mr. Bradley bought Mr. Shumway's interest, and is now the sole owner of the Bouton plant, which he will remove to a point not yet selected, and will start up in some branch of the foundry business. F. W. Barker has formed a partnership with W. R. Gwinn under the firm name of F. W. Barker & Co., and they will manufacture architectural ironwork and fire-escapes. Their city office is in the First National Bank building, Chicago, and they have secured the Williams Foundry at Grand Crossing. They have placed in charge of the foundry the old foreman of the Union Foundry Company, and have had transferred to them the flasks, catalogues and all all other property of the Bouton Foundry Company pertaining to architectural ironwork, including the unfilled contracts.

The Dean Brothers Steam Pump Company, of Indianapolis, Ind., have recently added a new duplex pump to the waterworks at Marion, Ind. It has a capacity of 2,000,000 gallons a day, and when tested recently proved satisfactory. The pump already in service there was put in by the Dean Brothers eight years ago and is in first-class condition, being good for many years to come.

H. O. Whitney, Keokuk, Iowa, agent for New Improved Andrus Brick Press, manufactured at Keokuk, Iowa, reports a number of sales of these machines. During the past week they have shipped one to the Grape Creek Clay Company, Grape Creek, Ill., also one to Cambria Brick and Tile Company, Goldon, Col. These machines have been on the market for a number of years, and practical experience has taught the manufacturers the defects and remedy for the same, and they inform us their ma-

chines now give good satisfaction, and mention quite a number of duplicate orders, which they have received as evidence of this fact.

B. W. Goodsell, 139 Lake street, Chicago, is actively pushing the introduction of his rubber-back flax piston-rod packing, which was brought before the trade a short time since. He has received a number of very flattering testimonials from those who have tried this packing. It consists of a wearing body of braided Russian flax, having an elastic rubber back securely attached by vulcanization, which overcomes rigid bearing, reduces friction and increases the durability of the fiber in contact with the rod. It works equally well with either steam or water, and is recommended by the inventor as a packing for air-compressors, elevators, &c.

We note that the Valley Iron Works, of Williamsport, Pa., continue to forge ahead with their Valley Engines. A few of their recent orders are given herewith: Tatum & Bowen, San Francisco, Cal., one 100, one 50, one 70 and one 30 horse-power; Northwestern Machinery Company, St. Paul, Minn., one 100 horse-power; Waterhouse Electric Company, Baltimore, Md., four 50 horse-power; Allen Mfg. Company, Chicago, Ill., one 50 horse-power; William K. Calvert, Altoona, Pa., one 30 horse-power; Lanfield, Davidge & Co., English Center, Pa., one 30 horse-power; Winfield Flouring Mills, Winfield, Pa., one 70 horse-power; Montoursville Planing Mills, Montoursville, Pa., one 50 horse-power; Demorest Fashion and Sewing Machine Company, Williamsport, Pa., one 100 horse-power; S. R. White & Bro., Norfolk, Va., one 70 horse-power. They also report orders for a large amount of general machinery, iron and brass castings, &c.

Some time ago we illustrated and fully described a 100,000-pound screw-power vertical testing machine, built by Riehle Bros., of Philadelphia. The same firm now presents a 60,000-pound machine, arranged somewhat similar to the other and adapted for those who do not wish to use one of larger capacity. The dimensions of the machine are as follows: Height, 6 feet; length, 8 feet; width, 2 feet 5 inches. Its weight is 3500 pounds. It is arranged to take in tensile specimens 8 inches or less with 25 per cent. elongation for 18-inch specimens, or more for shorter lengths. Round specimens, 1½ inches in diameter or less. Square specimens, 1½ inches square or less. Flat specimens, 2½ x 1 inch or less. Transverse specimens, 20 inches or less to 6 inches long. Compression specimens, 8 inches long or less. Compression surfaces, 6 inches in diameter. Motion of pulley head, 23 inches. There are four different speeds with which specimens can be tested, the maximum being 4 inches per minute and the minimum 1 inch in 10 minutes. There are two speeds for driving in opposite directions. Power is applied by levers for starting, stopping, reversing and also for changing the speeds.

The additions and changes to the Pumping Station of the Princeton Water Works, at Princeton, N. J., have been completed and the plant is in successful operation. The improvements were in charge of Frank C. Roberts, C. E., of Philadelphia.

#### Hardware.

The handle factory of L. C. Gleason, Fenton, Mich., was entirely consumed by fire January 15 with tools and stock. Mr. Gleason advises us that he will rebuild at once, making his factory very completely equipped with the most improved machinery for axe handles, of which he makes a specialty.

The new works now being constructed by the Reading Hardware Company, at Reading, Pa., will be ready for occupancy about March 1 next.

The Bryden Horse Shoe Company, of Catasauqua, Pa., have commenced making shoes in their new works, and when the plant is in full working order the capacity will be very largely increased. The business of the company is constantly increasing.

The Palmer Hardware Mfg. Company, Troy, N. Y., have purchased the effects of the Albany Hardware Mfg. Company, Albany, N. Y., consisting of patents, machinery, tools and stock, and are transferring the plant to their works in Troy, which transfer they state will not cause much interruption in the work, nor retard the filling of orders. The line consists of patented specialties well and favorably known to the trade, in which are included solid steel mining knives, ice tongs, ice picks, ice axes, sidewalk cleaners, transom lifters, &c.

#### Miscellaneous.

A charter has been granted to the Adams Coke-Oven Bottom Mfg. Company, of Pittsburgh, for the purpose of manufacturing coke-oven bottoms.

The United States Pipe Bending and Coiling Company, of Chicago, have been incorporated, with a capital of \$100,000. Incorporators, M. M. Jamieson, George W. M. Reed and William S. Morse.

#### New Factory.

The new buildings of S. L. Allen & Co., Philadelphia, for the accommodation of their increasing business, are intended to constitute an extensive plant, a model of its kind, having a capacity nearly treble that of their present works. They are situated in a very eligible site, being at the crossing for the New York branch (four track) of the Pennsylvania Railroad, passing on the North and the Bethlehem branch (two track) of the Reading railroad on the east. This is the only crossing of these two railroad systems on grade within the city limits. A handsome and substantial brick station is just being completed by the Pennsylvania Railroad Company, directly opposite the lot. Both railroads are, of course, available for sidings which can be run directly through the center of the lot lengthwise, a distance of over 500 feet. The whole plot contains over 2½ acres. The main building fronts on Glenwood avenue, is 176 feet long and 59 feet wide, and will be three stories high, and adjoining it on the west is the warehouse, 125 feet long by 43 feet wide, also three stories. These are so constructed as to carry a fourth complete floor in the future, if required; the planking of the floor to be put in position now, and the temporary roof to be constructed to rest directly upon it. The main building contains the stock rooms for castings, for malleables and for wrought steel parts; also the grinding and polishing rooms and the assembling, painting and packing departments. Each floor is connected directly with the warehouse floor. The forge building extends 250 feet in length along the Pennsylvania Railroad front; it is 46 feet wide, single story, with high lantern roof. The boiler and engine rooms are situated more centrally between the three buildings, and are 40 by 35 feet, and 45 by 35 feet respectively. Over the engine room will be the pattern and experimental rooms. Other small buildings for stocks of steel, paints, oils, &c., will be conveniently situated. The sidings will extend to supply conveniently the different departments and to ship the finished goods. The engine will be 125 horse-power, Green or Corliss pattern, and will

be constructed for the most recent and improved plan of rope driving; conduits beneath the level of the ground will furnish roomy accommodations for the ropes and the necessary tighteners, deflectors, &c., with space for passage from the engine room to the perpendicular shafts through which the power is conveyed to the different buildings. Suitable and convenient elevators, surface hand-car railways, overhead tracks and conveyers, with steam heating, electric lighting, &c., will combine to make an ideal plant for the purpose intended. The grinding and polishing machinery will be of special or improved patterns, with exhausts for dust, to make the life of the polisher more endurable. The forging shop will be supplied with special hammers, presses, forges, tempering apparatus, &c., of the most suitable patterns, and with devices for quick handling of stock, whether in bars or in finished parts, or in a partly completed state.

#### A Great Rail Record.

The South Chicago works of the North Chicago Rolling Mill Company have again broken the record in the production of Bessemer steel ingots and rails. In the 24 hours ending at 6 o'clock on Saturday morning, the 26th inst., their production was as follows:

Blast Furnace Department.			
			Tons.
Furnace No. 5, direct metal.....	197		
" " 6, " .....	183		
" " 7, " .....	216		
" " 8, " .....	205		
Total direct metal.....	801		
Cupola metal.....	629		
Total.....	1430		

Bessemer Department.			
	Heats.		Tons of ingots.
Day turn.....	59		693
Night " .....	60		700
Total.....	119		1393

Rail Mill Department.			
Rolling for Union Pacific Railway, 75 pounds per yard:			
	Rails.		Tons.
Day turn.....	1838		611
Night " .....	1912		636
Total.....	3750		1247

The production for the month of January will be very heavy. It may seem singular that such extraordinary work should be done in these depressed times when orders for rails are not pressing, but it is in this way that expenses are reduced per ton of product in order to be able to sell for the low prices now ruling.

It has been suggested that a thorough search should be made in this country for a deposit of magnesite, suitable as a raw material for the lining of open-hearth furnaces for the basic process. We are informed that the cost of the foreign material is one of the principal objections in the way of the introduction of the basic process by at least one leading firm of steel makers. Until it is found a good deal of basic steel must be imported.

The total number of immigrants arriving in the United States from all countries save Mexico and Canada during 1888 is 518,518, against 510,058 the previous year.

Taking effect February 1 the following advanced freight rates from Pittsburgh will go into effect to Salt Lake City, Ogden and Utah common points: On classes 1, 2, 3, 4, 5 and A \$2.50, \$2.15, \$1.75, \$1.45, \$1.25, \$1.10. The present rates are \$2.05, \$1.80, \$1.55, \$1.30, \$1.15, \$1.05.



# The Iron Age

New York, Thursday, January 31, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
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GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## Pig Iron Statistics.

Nearly two years since *The Iron Age* made a change in the method of collecting and presenting its monthly statistics of furnace capacity in blast, the principal aim being to estimate as closely as possible the actual rate at which pig iron was being produced in the country, and to show this on the first of each month. In this effort we have been favored with the kind co-operation of the great majority of the makers, though we may frankly acknowledge that a certain number do not respond. This, and the occasional delays naturally incident to gathering figures from so wide a territory have introduced elements of error, which are not serious, broadly speaking, but which are keenly felt by every painstaking statistician.

In the review accompanying his annual statistical report, James M. Swank, the Secretary of the American Iron and Steel Association, says: "The extraordinary activity of the furnaces in the last few months in the year brought the total production far above the figures indicated by the statistical results of the first half of the year and by subsequent unofficial statements." What Mr. Swank probably alluded to was the extraordinary estimate, apparently accepted by many, made in the middle of December by the *American Manufacturer*, which reached the conclusion, from its monthly blast furnace reports, that the 1888 production was a little less than 6,000,000 gross tons. In *The Iron Age* of January 10 we put the total output at 6,500,000 gross tons. The official statistics collected by Mr. Swank, just published, make the correct figure 6,490,739 gross tons, certainly a satisfactory showing, though the total was probably a surprise even to Mr. Swank, as his preliminary estimate did not nearly reach that figure.

But the great discrepancy in the estimate of our Pittsburgh contemporary appears in even a more serious light when it is considered that the error was concentrated on the second half of the year 1888, the official figures for the first half being known. On a production of 3,470,647 gross tons the *American Manufacturer* was 534,843 gross tons too low, its premature estimate having been 2,935,804 gross tons.

Let us inquire whether this grave error is possibly confined to any one of the three groups:

	American Manufacturer.	Am. I. & S. Ass'n.	Differ- ence.
Charcoal.....	247,925	286,206	38,281
Anthracite....	688,862	866,322	177,460
Coke.....	1,999,017	2,318,119	319,102
Totals....	2,935,804	3,470,647	534,843

If monthly capacity statistics can lead to so erroneous a result their value cannot be great. Our contemporary stated at the time: "This estimate is based upon

the capacities of furnaces in blast given in our monthly reports. Capacity, as is well known to all furnacemen, is a different thing from actual make, being somewhat in excess. What percentage must be deducted from reports of capacities to arrive at actual make, approximately, may be ascertained with a fair approach to accuracy by comparing what the make would be if capacities were made with what actual make is."

The *American Manufacturer* must be somewhat horrified to find that its "capacity" is a very different thing, indeed, from make; that it is not in excess of the latter, but that it calls for a generous plus factor of safety somewhere in the vicinity of 15 per cent.

By way of contrast we present below the results of the estimate of *The Iron Age*, based, as we frankly stated at the time, on partial, though fairly complete returns:

	The Iron Age.	Am. I. & S. Ass'n.	Differ- ence.
Anthracite....	898,303	866,322	+ 31,981
Coke.....	2,313,216	2,318,119	- 4,903
Totals.....	3,211,519	3,184,441	+ 27,078

We did not put forward any detailed estimate of the make of charcoal pig, but after a rough calculation of the data at hand placed it at 530,000 gross tons at least for the year, or about 282,000 tons for the second half. This, it will be observed, is about 4000 tons out of the way.

The point which we wish to emphasize, however, is that the readers of *The Iron Age* may use its monthly blast furnace reports to estimate, as closely as necessary for all practical purposes, not alone the total output of pig iron, but also the make of single districts and States, without applying any arbitrary factors whatever. Such a computation of the 1888 product of coke and anthracite pig, made on the basis of the monthly figures of *The Iron Age*, shows the following, comparing them with the official returns:

	The Iron Age.	Am. I. & S. Ass'n.	Differ- ence.
Anthracite....	1,701,431	1,630,115	+ 71,716
Coke.....	4,187,110	4,236,705	- 49,595
Totals.....	5,888,541	5,866,820	+ 22,121

We desire to call particular attention to this, because these reports, to be of any service at all, should be useful to the trade. The figures submitted in our January statement furnish an excellent illustration of the direct deductions which can be drawn from such data. We stated then that we were producing at the rate of over 7,500,000 gross tons annually, a rate which was clearly excessive. In fact, including charcoal pig, the rate was close to 7,720,000 tons, or considerably over 1,000,000 tons more than was made in 1888. These reports possess the great value which a prompt revelation of the facts has to all concerned in this great industry. They showed at that time the necessity of caution, and foreshadowed the turn in the markets which has since come.

Mr. Walter C. English, for a number of years connected with the business department of *The Iron Age*, has been placed in charge as manager of the Boston office, which we have just opened at 149 Congress street. Mr. English, who is widely known to our patrons in the New England States, deserves the confidence and support which we bespeak for him.

## The Samoa Trouble.

The Samoan difficulty is rapidly becoming critical, the amicable relations heretofore existing between the United States and Germany being seriously menaced. The indications serve to confirm a belief that it is the settled determination of Germany to establish her authority as a dominating influence in the islands, and this in disregard of existing treaties between the United States and Samoa, one formally concluded in 1878, when Wm. M. Evarts was Secretary of State, and a prior treaty negotiated by Commander Meade, U. S. N., in the year 1872, signed by all the Samoan chiefs, expressly ceding the United States Government certain exclusive rights and privileges, including a permanent coaling station at Pago Pago harbor. Touching the question of intervention, the treaty of 1878 stipulates that, should differences arise between the Samoan Government and any other country, the United States would "employ its good offices for the purpose of adjusting those differences." This pledge is the extent of the obligations assumed. The German authorities apparently ignore the existence of these treaties, or at least practically deny their validity. Americans in Samoa represent that on various occasions they have been treated with gross indignity and that the flag has been outraged.

An emergency of an extraordinary character was precipitated a few weeks ago, when King Malietoa was enticed on board a foreign man-of-war and sent into captivity. Much bloodshed ensued, a number of Germans who disembarked from a naval vessel being among the victims. Bismarck's organ at Berlin vindicates German conduct and pretensions in this matter, and, furthermore, repudiates any claim that may be set up as an impediment to the ascendancy in Samoa of the German flag. In consequence of these events the authorities at Washington are constrained to take immediate action. Five United States vessels will soon be concentrated in Samoan waters, and Senator Sherman, who is supposed to reflect the views of the incoming Administration, calls for an appropriation of \$500,000 to be immediately available for the protection and improvement of the coal station at Pago Pago harbor. The possession of this harbor is regarded by Senator Edmunds as an object of primary importance. During the past week he authorized a statement to this effect: "The Samoan Islands are on the highway of commerce across the Pacific Ocean, and are of great importance with relation to the development of the trade via the projected canals across the Isthmus of Panama and across Nicaragua. To a power whose ships are sent on long cruises the establishment of coaling stations is a necessity, and the location of one on the central island of the Samoan group, as provided for in the proposed amendment to the Diplomatic and Consular Appropriation bill, reported by the Committee on Foreign Relations, is looked upon as one of great importance to us." As both Senators Sherman and Edmunds are assumed to speak advisedly, it would appear to be the fixed determination of the Washington authorities to vindicate the rights and interests of the United States in Samoa, whatever they may be.

The situation may become critical. Congressman Thomas, of Illinois, an active member of the Naval Committee, would insist upon the *status quo* as it existed before the expatriation of King Malietoa. Moreover, Admiral Kimberly, commanding the flagship Trenton, is recognized as an officer who will shrink from no known duty, and yet one who will act with calmness and discretion. The American people, not unmindful of the high character of the German nation, will cherish a firm belief that international difficulties, however serious, can be adjusted by some other means than hostile collision. At the same time it is evident that exasperation on either side may proceed to a point where ordinary considerations of prudence and expediency may be lost to view under the pressure of an overwhelming public sentiment.

In the present situation two facts of deep significance come into view: The case as affecting Germany is the war specter hovering in the horizon of French politics, with which is associated the name of Boulanger. Of another character, not less practical as concerns the United States, is the popular conviction, now gaining strength as never before, that many millions of money must be devoted to building up the national defenses and naval armaments.

#### Railroad Demurrage Charges at Chicago.

The mercantile and manufacturing interests of Chicago have been considerably stirred up of late by the imposition of demurrage charges by the railroad companies. These companies organized a car service association in September last for the purpose of enforcing a uniform regulation imposing a charge of \$1 per day on each car remaining unloaded after the expiration of 48 hours. As a very large amount of freight was being moved at that time, and the business of the railroads would have been embarrassed but for a regulation of this character, it was accepted by shippers generally without much protest. Now, however, the heavy movement of freight is ended, the demand for cars is not so pressing, and shippers are of the opinion that the rules should be relaxed, if not entirely suspended. Some of them, indeed, contend that demurrage charges by railroad companies are illegal, and have carried the question into the courts.

On the 23d inst. a case of this character was tried before a Chicago justice. A railroad company had refused to permit some coal cars to be unloaded until demurrage charges were paid, and the consignees had secured a writ of replevin against the company for the coal. The attorney for the consignees cited cases to show that a railroad had no right to make demurrage charges under any circumstances, as such charges were confined to maritime business, and could only be established by provision in the bill of lading. On the other hand, the railroad company's attorney cited decisions holding that carriers could charge a reasonable amount for demurrage, although the bill of lading did not provide for it. To prove that \$1 per day was a reasonable charge, some nice calculations were submitted, showing that on the basis of the cost of the yard-space

used for the discharge of freight, a single car would occupy room on which interest at 6 per cent. per annum amounted to 77 cents for each working day, while the average daily earnings of the cars was 98 cents when they were in actual use in the transportation of freight. Unfortunately the case was complicated so that it could not be decided on the simple issue of the legality of demurrage charges, and the justice decided against the railroad company on the ground that they should have let the coal firm take their coal and brought suit for the demurrage if payment had been refused. An appeal will be taken, and probably the upper courts will pass upon the important legal question involved.

It is altogether probable that other cases arising under the enforcement of the demurrage regulation will soon be brought up in the courts. Abuses are charged against the railroad companies, which, if true and duly proved, will place them in a very unsatisfactory position in the present state of public sentiment. It is alleged that the companies have been so eager to farm this new source of revenue that even when a car has been accidentally shifted from its proper place before it was unloaded, and several days elapsed until the mistake was ascertained and the car returned, the consignee has been obliged to pay demurrage for the entire time, notwithstanding the fact that he did not know and had no means of ascertaining the whereabouts of the car in the meantime. Numerous instances are reported of consignees being unable to get to their cars to unload them, because they were hemmed in by other cars, until after the expiration of the 48 hours of grace, but the charge for demurrage was imposed promptly, without regard to the circumstances. The protests of suffering Chicago business men have been disregarded to such an extent that it is not at all remarkable that they are now beginning to kick vigorously.

As usual, the small shippers are handled more arbitrarily than the larger ones. Those who receive but a few carloads at a time, which are discharged in the company's yards, are obliged to pay demurrage charges before they can take their goods. Large shippers, who have their own sidings and whose movements are not directly controlled by yardmasters and freight agents, unload the cars consigned to them and lay bills for demurrage to one side to await negotiations. Small shippers pay the charges, and do not sue to recover them, because the cost of litigation would far exceed the amount in question. Large shippers will probably have such an accumulation of bills in time that they can afford to dispute the legality of the charge for demurrage, if the system is not changed.

In considering this matter the fact cannot be overlooked that the railroad companies have good ground for the position they have taken, although they have unquestionably made the time allowed for unloading too short, and have permitted the subordinate officials to introduce abuses which should by no means be countenanced. Quite a considerable class of business men receive coal and other merchandise on consignment, maintain no storage yards or warehouses, and trust to their selling ability to enable them to dis-

pose of such consignments by the time they arrive at their destination. A glut of such merchandise, however, will cause an accumulation of loaded cars that will in a short time fill a railroad company's spare tracks. Such cars have been known to stand for a month or more without being unloaded. Foundrymen have received coke and used the car in which it came for a coke-house until it was gradually emptied, when it was replaced by another full car, which was used in the same way. Some regulation was evidently needed to correct such transformations of rolling stock into storehouses, but not regulations which work hardship all round. The Chicago merchants and manufacturers also believe that they are unjustly discriminated against, as this rule does not apply generally at railroad centers throughout the country. If this is really the case, and shippers at other points are allowed great latitude, the people of Chicago are unjustly treated, and it is no wonder that they protest. Chicago is too important a trade center now for such discrimination.

#### The Progress of Paraguay.

The war of 1865-1870 between Paraguay on the one hand and Brazil and the Argentine Republic on the other reduced the Paraguayan male population by one-half, 170,000 men perishing by the sword and disease, while 50,000 women and children died from famine and exposure. Gradually the equilibrium between the two sexes has been a little restored, there being at present 130,000 males and 170,000 females, without counting an Indian population, half civilized and wild, of 130,000. Short of hands as the country was, and utterly ruined, recovery from such a blow has been slow, but the fertile soil and fine climate, and the many resources, at length begin to attract immigration of a desirable kind from Europe, stimulated by a free passage and liberal land grants to settlers. To the native population of 430,000, inclusive of Indians, some 10,000 foreign settlers have thus been added and two flourishing colonies founded, San Bernardino and Villa Hayes, named after the American ex-president. German immigration now increases rapidly.

Paraguay is well watered by the Pilcomayo, Paraguay and Paraná rivers, the latter, jointly with the Uruguay, forming the Rio de la Plata flowing into the Atlantic between Buenos Ayres and Montevideo. Although an inland country, Paraguay has thus easy and rapid access to the sea. The capital is Asuncion, with a population of 30,000, and there are a dozen other cities with populations ranging between 5000 and 15,000. The finances are prosperous, the income, including land sales to the amount of \$329,146, being \$1,938,176 in 1887, and the outlay \$1,400,503. In the same year the home debt was reduced to \$1,068,250, \$398,500 having been paid back out of the surplus revenue, while the foreign debt was consolidated into \$4,250,000 2 per cent. bonds, to carry 3 per cent. dating from January 1, 1892, and 4 per cent. from January 1, 1897. The Government owns most valuable lands which it sells on very liberal terms to land companies and *bona fide* settlers; it is furthermore the owner of extensive, valuable so-called "yerbales" or forests, in which the



famous Paraguay tea, "yerba mate," grows spontaneously and abundantly—a tea consumed all the way to the northern provinces of Brazil. It also owns \$500,000 shares of the National Bank, which has a stock capital of \$1,500,000, paying 10 per cent. dividend, and commanding 10 per cent. above par, although only 50 per cent. has been paid in.

The army has been reduced to 623 men file; in the event of war the militia—which is quite numerous—is enrolled. The navy consists of three steamers, two of which are mere revenue cutters. There are 152 km. of railway in running order, and—besides the telegraph wires running parallel therewith—72 km. of line connecting the republic with the world's cable system at Paso de la Patria.

European and Argentine capital is flowing freely into the country. A company, represented by H. A. J. Baiz, has been formed in Amsterdam, under concessions from the Paraguayan Government, for the purpose of tobacco planting on a large scale. The lands have been secured, and quite a number of privileges with them, among others exemption from the tobacco tax. Tobacco grown in Paraguay compares favorably with Sumatra and Manila. The Paraguay Land Company are about to build a railroad from Villa Hayes, near the capital, to Puerto Margarinos on the Pilcomayo River, in Bolivia, a distance of 600 km. At Buenos Ayres the Paraguayo-Argentine General Trading Company have been formed with a capital of \$5,000,000, with a branch concern at Asuncion, chiefly for the purpose of doing a banking business, and the issue of hypothecary cedulas. Three of the managers are appointed by the Government of Paraguay.

At the time the foreign debt was consolidated the bondholders received as part compensation 500 square leagues of public lands, and a land company is now to be formed to utilize this valuable possession, in connection with an agricultural bank with a capital of \$8,000,000. The import increased from \$1,805,741 in 1886 to \$2,221,750 in 1887, and the export from \$1,620,779 to \$1,715,853. The arrivals at Buenos Ayres and Montevideo in 1886 were 320 vessels with cargoes for Paraguay, of 60,408 tons, 223 thereof being steamers, while river navigation carried entries of 343 craft, with 12,239 tons. The export in 1886 consisted chiefly of tobacco, 5306 tons; yerba mate, 4508 tons; oranges, 25,000,000; cabinet wood, 151,281 cubic yards measurement, and 81,000 hides.

Trouble is brewing just at present between Paraguay and Bolivia, the latter having just emerged from a revolution, and a frontier dispute having arisen between these neighbors. Brazil sent to Matto Grosso, bordering on Bolivia, a military expedition under Marshal Fonseca, on December 27, in order to watch events, as matters look threatening. It would be deplorable to see Paraguay, now on the high road to prosperity, engage in a prolonged border war. Paraguay claims the Bahia Negra district, and is dispatching reinforcements to Puerto Pacheco. Bolivia looks upon an outlet on the Paraguay as a necessity of the Republic, national and commercial life, and Puerto Pacheco—lying 7 feet above the highest inundations—is the only naturally available place for a port on the west side of the Paraguay

River. These events coincide with the formation of an American river navigation company for placing a line of steamers between Campana and Asuncion on the Paraná River. Intelligence as to whether peace is to be preserved in that region or not is consequently expected with some anxiety, not only in South America and Europe, but quite as much in this country.

## American Pig Iron Warrants.

For some months past a movement has been progressing, under the direct initiative of George H. Hull, of Louisville, Ky. Rumor has seized upon vague hints of the negotiations progressing, magnifying them into some great trust, with special reference to Southern iron interests. As a matter of fact, the undertaking proposes simply the establishment on a sound basis, worthy of confidence, of a company which will undertake the issue of pig iron warrants, a readily negotiable security, against pig iron stored, under certain conditions, at a number of points, broadly on the lines of the great warehouse concerns in Great Britain. The American Pig Iron Storage Warrant Company, whose capital of now \$2,000,000 has been subscribed, has taken the first steps toward carrying out this plan. A considerable number of pig iron producers have entered into contracts with the company, others have promised their support or expressed their general approval of the system. It is stated that these represent an annual capacity of about one million tons. Negotiations, only recently begun in this direction, are still in progress, the principal work accomplished being the creation of the necessary support of influential interests as stockholders.

### THE STOCKHOLDERS.

The *personnel* of those who have taken an interest in the American Pig Iron Storage Warrant Company is well calculated to command attention and confidence. The officers of the company are:

President: George H. Hull, the originator of the enterprise, a well-known iron merchant of Louisville.

Vice-president: George F. Tyler, of Philadelphia, a retired capitalist, interested in a number of furnace and coal companies, and prominently identified with the now famous Pocahontas Land Trust.

Treasurer: Logan C. Murray, of New York, who is president of the United States National Bank.

The executive committee consists of the following, in addition to the officers named:

William Libbey, chairman, of New York, a former partner of A. T. Stewart, and identified as a director with a number of large enterprises like the Erie Railroad and the United States Trust Company.

Thomas Rutter, of New York, who is connected with the Consolidated Gas Company, and the Louisville and Nashville Railroad.

George T. Barns, of Philadelphia, prominent in the iron trade of that city.

Samuel R. Shipley, of Philadelphia.

Among the other stockholders are: J. H. Inman, of Inman, Swann & Co., cotton merchants, who are connected with a good many Southern railroad, coal and iron interests, being identified with the Richmond Terminal Company.

Eckstein Norton, president of the Louisville and Nashville Railroad.

H. O. Armour, brother of P. Armour, and New York representative of Armour & Co., of Chicago.

G. Philler and Morton McMichael, of Philadelphia, president and cashier respectively of the first national bank formed

under the Chase law, the First National Bank of Philadelphia.

G. S. Coe, of New York, the veteran president of the American Exchange National Bank.

S. A. Caldwell, of the Fidelity Trust Company, of Philadelphia, the first trust company organized in the United States.

S. R. Shipley and T. Wistar Brown, president and cashier respectively of the Provident Life and Trust Company, of Philadelphia, the company itself also being a stockholder.

S. T. Tyler, of Philadelphia, president of the Fourth Street National Bank and receiver of the Shenandoah Valley Railroad.

Jay O. Moss, of New York, president of the Columbus and Hocking Coal and Iron Company, and secretary and treasurer of the Cotton Seed Oil Trust.

A. Heckscher, of Philadelphia, prominently identified with Pennsylvania industrial interests.

J. C. Bullitt, of Philadelphia, and John J. McCook, of New York, leading lawyers of both cities.

Drexel, Morgan & Co., of New York, and Drexel & Co., of Philadelphia, the well-known bankers.

J. D. Probst, of New York, banker.

W. P. Thompson, of New York, vice-president and active business manager of the Standard Oil Company.

S. Neustadt, of Hallgarten & Co., bankers, New York.

Gen. Samuel Thomas, of the East Tennessee, Virginia and Georgia Railroad and other railroad and industrial interests.

George H. Seeley, of New York, president of the Ivanhoe Furnace Company, of Virginia.

J. H. Flagler, of New York, president of the Cotton Seed Oil Trust and of the National Tube Company.

W. R. Hart & Co., leading Philadelphia iron merchants.

Samuel Dickson, of the Crane, Dunbar and a number of other furnace companies.

G. W. Troutman and T. Kitchen, of Philadelphia, president and cashier, respectively, of the Central National Bank of that city.

Henry McCormick, of Harrisburg, the well-known iron manufacturer of that place.

Luther S. Bent, of Steelton, the general manager of the Pennsylvania Steel Company.

Enoch Ensley, of Memphis, Tenn., prominently identified with a large number of Southern enterprises.

Naylor & Co., of New York, the largest iron and steel importers.

H. Wickham, of Philadelphia, president of the Southwest Virginia Improvement Company.

E. B. Leisenring, of Mauch Chunk, identified with large anthracite, coke and coal interests in Pennsylvania and in the South.

We have dwelt upon the *personnel* of the company because it proves a backing which places it in a position where it commands the serious attention of the iron trade, where every producer must thoroughly investigate the question whether or not the scheme is one in which he must co-operate, where every commission merchant must consider to what extent the new methods of business impending are likely to influence his interests.

### THE PLANS OF THE COMPANY.

We present below the points brought out in favor of the system proposed, printed in a pamphlet, a few copies of which were privately circulated some time since. We may preface it with the following data:

The company proposes to establish storage yards, first at the furnaces, called primary storage yards, on land leased at a nominal rental from the furnace companies, who

propose to store in it, fence it in, put in tracks, &c. The company makes contracts with furnace companies for a period of years, the obligation entered into by the furnace being that it will not place any iron, against which warrants are to be issued, into the hands of any other warrant company. The producer is at liberty to store any part or none of his make in the yards. For what he does store in it he pays a yardage of 25 cents a ton and 2 cents per ton per month carrying charges. In consideration of these payments the storage company acts as responsible custodian of the iron. To the consumer it guarantees the grading, which is checked by experts. It issues warrants signed by the warrant company and registered by a trust company in New York. The warrants call for 100 tons of pig iron of a specified brand and grade, delivered free on board cars in the yard named in the warrant.

The charges are relatively low, the cost of carrying pig iron a year being 49 cents. In England the yardage charge is 50 cents a ton and a monthly storage charge of about 2 cents a ton.

A result of the introduction on a large scale of the storage warrants is likely to be considerable speculative interest in pig iron. It is probable that the warrants will be listed in the leading exchanges.

The plans of the company contemplate ultimately, as the business develops, to establish "secondary" storage yards at the leading points of consumption, such as New York, Philadelphia, Chicago and other great centers.

#### THE ARGUMENT.

The following is put forward by the promoters of the company:

Pig iron is the most important of all crude materials that enter into the commerce and manufactures of the country, and it is conceded upon all sides that no other article has such a controlling and disturbing influence on general business, and yet no effort has been made to control its violent fluctuations.

Anthracite pig iron was \$18.75 per ton in Philadelphia in August, 1861, and \$73.62½ in August, 1864. It was \$30.50 in January, 1871, and \$53.87½ in September, 1872. It was \$16.50 in November, 1878, and \$41 in February, 1880. In the Western markets iron reached \$80 per ton in 1864, and, after declining to less than half that price, reached \$59 in 1872. Forge irons, which sold for \$40 in 1880 in the West, declined to \$13 in 1884, advanced to \$20 in 1885, and are now down to \$13 again in the same markets. The causes of these great fluctuations in price are:

1st. The small stock of pig iron carried in the United States.

2d. The great length of time and enormous amount of money required to increase the production, when the return of a prosperous condition of business demands it.

It takes a year or more to organize and build a furnace, and a furnace capacity great enough to supply the country in prosperous times would be double enough to supply it in dull times. The remedy, therefore, cannot come through the increase in furnace plants. The only safe and practicable remedy is in the carriage of large stocks of pig iron, probably equal to the production of one or two years. Last year the United States produced 6,417,148 gross tons of pig iron, and imported 1,997,241 tons of iron and steel. The stock of pig iron on hand December 31, 1887, was 338,142 tons, less than three weeks' production, and but a trifle over two weeks' consumption, which is about the normal condition of affairs. These great fluctuations in price must continue as long as such small stocks of pig iron are

held. Small stocks will be held until some comprehensive system is inaugurated that will transfer the financial carriage of pig iron by certificates or warrants to financial centers, and at the same time leave the actual stock at the point of production, where it can be stored at a nominal cost, and, at the same time, where it can be transported, when needed, to any of the markets naturally tributary to that district.

The Standard Oil Company was organized in 1870. During the nine years before its organization oil ranged in prices between 52 cents and \$7.85 per barrel at the wells, a fluctuation of \$7.33 on a minimum price of 52 cents. For the last nine years prices have ranged from 67 cents to \$1.06 a barrel, a total fluctuation of 32 cents on a minimum price of 67 cents. Before the Standard organization, the largest stock ever carried was 534,000 barrels. During the last nine years the country has carried an average stock of 28,055,662 barrels, and during three years of this time the stock has averaged over 35,000,000 barrels. The small stock carried before the organization was done with great difficulty, the oil business was hazardous and attended with frequent failure; the large stock carried since the organization has been done with ease, and the business has been stable and profitable.

This is exactly the nature of the relief needed by the pig iron business, and a like result will follow the inauguration of such relief. There are not as many obstacles to the carriage of large stocks of pig iron as there are to the carriage of oil or grain. In the place of expensive elevators, tanks and pipe lines, which are subject to damage by fire and many other disturbing causes, pig-iron storage requires only a simple fence in the open air; and there are absolutely no risks of loss from fire, mold, leakage or deterioration in quantity or quality of the iron so stored, yet the United States carries but three weeks' production of iron, against about 12 or 18 months' production of grain and oil.

Elevators and pipe lines are not only profitable to their owners, but have grown to be a necessity to the producer, and money flows to their certificates of property, both as collateral and as a speculative commodity. Storage yards for the physical carriage of iron, and certificates or warrants representing the property in a form readily transferable, and giving absolute security to the holder, thus facilitating, with profit and advantage to all concerned, financial carriage, are the greatest commercial needs of the present day.

As a collateral security for loans no other article is as safe as pig iron, and no other article presents as little opportunity for fraud or loss in its handling. It cannot be injured by fire or flood; it is not affected in quality or weight by years of exposure to the weather. No appreciable amount can be stolen without detection. It requires no insurance. A mob cannot destroy or injure it, and even the destruction of the Government, which would leave valueless the bond that we now regard as the best of all securities, would not injure the ultimate value of a stock of pig iron. There is hardly a bank in Great Britain that does not carry pig iron warrants, which are there regarded as the safest of securities, and if issued here as abroad, by one company of known responsibility, they will soon be regarded here as the safest of all securities for collateral or investment. The large fluctuations in the price of pig iron during the last 50 years would have been even greater if we had not had the stocks of Great Britain to fall back upon in time of need. The foreign stocks consequently will not hereafter be the element of safety that they were when Great Britain made two or three times as much iron as America. Every material increase in the building of railroads is checked by the

enormous advances in iron, and most of the new mileage is laid at a cost of two or three times the normal price of iron. As a consequence, capital becomes frightened, railroad building stops, iron goes unnaturally low, in place of the unnaturally high prices of a few months before; this is always followed by general business depression, and it takes three, four or five years for the country to recover from the result. In fact, it is not until after many of the furnaces have gone through bankruptcy and stopped, and this process of ruin has gone so far that even the small consumption exceeds the production, that the turn comes. Then another enormous advance takes place, and the same process is repeated over another cycle of years. All commodities share more or less in these fluctuations, but iron is the primary and controlling cause.

A comprehensive organization that would make possible the cheap and safe carriage of pig iron would speedily result in the ability to carry several millions of tons with ease; would change the business from one of hazard and frequent failure to one of stability and uniform profit. The large stocks would not only be needed in prosperous times, but would prevent the enormous and unnatural advances in such times, and the facilities for carrying stocks would prevent the ruinous decline occasioned by our present inability to carry them. Some furnaces can afford to, and do, carry many months' production, but others are not able to carry a week's make, and must sell their iron as made. If the market will not take it at one price, it is forced off at a reduction, and the market goes tumbling down in consequence. The strong furnaces do not, therefore, get the full benefit of their ability to hold, but when they do sell must take the prices made by the necessities of the weak ones.

Some system that will enable the weak furnaces to store their iron, and realize money on it, will be of as much advantage to the strong as to the weak. Capital will absorb the warrants just as soon as they are made safe, and just as fast as they are created. We will very soon have a stock of one or two years' make of pig iron, which will be carried with perfect ease.

As the business of the country grows, means must be created to facilitate and handle it, yet up to the present time no means have been devised for adequately handling pig iron, the most important and controlling commodity, while less important interests have been intelligently and successfully provided for. Only a few years ago the country suffered in consequence of the inability of many railroads to provide sufficient cars to handle their freight, and out of this necessity grew car-trust certificates. At first these certificates were regarded with suspicion by both the car manufacturing companies and capitalists. There were few States in the Union whose laws made them a safe investment, but, by a little effort the laws were amended, the business was systematized, and to-day capital readily absorbs them, and the whole business of the country is relieved by the facility with which needy roads can supply themselves with the equipment to do their business.

For years every pig iron agent has been importuned over and over again to know if money could not be borrowed on iron at the furnaces. Occasionally efforts have been made to afford relief, but generally with dissatisfaction and sometimes with disaster; often in litigation to protect the loaner's rights if the iron remained in the hands of the furnace, and in heavy freights and expenses if it was moved and stored at other points.

Warehouse receipts or warrants will not be largely taken as a collateral or negotiable security as long as the property is in the possession of the borrower or producer,



and at the same time the bulk and weight of pig iron are economical obstacles to its movement from the place of its production until needed for consumption.

A storage company should be organized whose signature and seal to a warrant would give that warrant unquestioned standing in all financial centers, and yet a company whose only aim is to create a desirable collateral, and secure loans on same, will fall far short of the commercial need of the present time; a dozen such companies would not meet the demand of the hour. In fact, the needed benefit would be delayed, if not defeated, by a multiplicity of such companies.

Great business advances can only be accomplished through great organizations. Within a very few years the iron and steel product of the United States has increased from 1,000,000 to 10,000,000 tons; great improvements have been made in the modes of manufacturing, while the commercial modes of handling same are almost as crude, expensive and cumbersome as when the product did not exceed 1,000,000 tons. Such storage companies as have existed and do exist have done nothing toward improving the methods of handling and selling iron, and it is not believed that the desired benefits and improvements can be accomplished except through the organization of one powerful company for this express purpose, with which the whole furnace interest of the country will co-operate with confidence, and which will use its power and influence for the advancement and improvement of the interest that it depends upon for its growth.

This company should not only be powerful enough in the names and wealth of its organizers to control vast capital, but through its stockholders should be so allied with other large and active commercial interests as to insure the successful establishment of any economies and improved methods it might inaugurate in the handling and sale of pig iron.

The present cost of selling iron on commission, with some exceptions, is from 35 to 50 cents per ton. This is a severe tax on the profits of the furnace company, and at the same time only a reasonable return to the merchant, on account of the expensive and cumbersome way in which the business is now necessarily done.

It is believed that with the success of a National Pig Iron Storage Association will come the organization of metal exchanges in the important iron consuming centers, and that iron will soon be marketed at an expense not to exceed 5 cents per ton to the producer, and at the same time be much more profitable to the merchant, on account of the great increase in the actual tonnage in sales and the diminution of business expense in handling certificates in place of the actual property.

The sale of oil certificates in the New York Board alone is from 100 to 150 times as great as the actual product of the whole country. A commission of 5 cents per ton to the merchant or broker on iron sales by certificate or warrant will yield a much larger revenue than the present system.

There is no obstacle to the practical carrying out of this plan. Its success is believed to be insured in advance, from the certain benefit it offers to every branch of business that it depends on for its growth.

The regulation of the discrepancies in grades and weights of iron will not be as difficult to accomplish as they were with flour, wheat, oil, &c., and the difference in the chemical quality of iron made by the different furnaces can easily be provided for by naming the brand on each warrant. Such facilities are more urgently needed for pig iron than for oil, grain or any other commodity, and if properly con-

ducted would excel them in usefulness. Capital would soon seek and prefer this security, on account of its visible, stable and indestructible character; the interest rates on the same would soon be among the lowest, and it would absorb the speculative capital of the country more largely than almost any other commodity.

The company should acquire ground sufficient for a storage yard at the various furnaces by long lease, so as to have actual physical and legal possession of the iron stored. This company should be elastic enough in its organization to permit of its expansion to national proportions and with rapidity, as the demands upon it would be great as soon as understood. Secondary yards should ultimately be established at the principal points of consumption, to which sufficient stocks of iron can be moved, particularly in times of low freights. Warrants should be issued as iron is stored, which would guarantee weight, grade and brand of iron, deliverable at the primary yard on return of the warrant, or equivalent delivery at secondary yards on reasonable notice. But the establishment of the secondary yards should not be attempted until after the sale of iron by warrant has been adopted.

The primary yards at furnaces should be a part or continuation of their present yards, so that iron could be stored in the storage company's yard from the pig bed without any addition to the expense of handling. The expense of loading on cars from storage company's yard when shipped would be the same, and no addition to the present expense of loading from furnace yard—in fact, any plan that involved an extra handling of the iron would not be admissible, the storage company would be a permanent success only on the basis of its being a benefit and saving to the furnace companies.

At the present time pig iron is sold largely on four and six months' time, and even when sold for cash a period of from 30 to 60 days usually elapses between the shipment and actual payment for the iron. Iron sold by warrant is paid for on delivery of the warrant. It is believed that this storage facility is so much needed that it will grow rapidly, as soon as understood, and that iron will not only soon be sold by warrant, in place of the present slow, risky, expensive and cumbersome manner, but that the saving to the furnace in the delay and risk on even their cash sales over the present custom will alone pay the storage fee of the company, leaving as a clear gain to the furnace companies all the advantages and savings in commissions, risks, freight and other economies that might be brought about through the efforts and experience of as comprehensive an organization as is proposed.

The furnace business has for years been suffering for the want of some such organization, and in the absence of the needed relief have devised various plans to save commissions and correct existing irregularities; but in many cases these efforts have not been successful. Most furnace companies object to the present custom of selling for long future deliveries, but are compelled to so sell to insure prompt disposition of their iron as made; under the proposed system, furnaces can abandon the one-sided system of the future delivery sales as soon as there is an assured daily sale on exchange boards. As the heavy purchases for future delivery are made on the eve of anticipated advances, the furnaces rarely get much benefit from the unnatural high prices, as the reaction sometimes comes before they have filled their old sales. On the other hand, however, furnaces are apt to get the full disadvantage of the unnatural low prices, as consumers rarely buy for future delivery while the tendency of prices is down or stationary. Any system, therefore, that will prevent

the unnatural fluctuation in iron will be of great benefit to the furnaces, and large stocks will alone accomplish this end. It is not expected that the needed accumulation of stock will result from the amount of iron that will be stored to secure advances. As soon as a sufficient number of warrants have come into existence to justify their sale on metal exchanges, it is expected that the furnace companies will then store the bulk of their iron, because it will be the simplest and cheapest way of disposing of it, whether it is taken for consumption or speculation. The small amount of speculation directed toward pig iron in the past has had the effect of increasing its great fluctuations, while a large and systematic dealing by speculation would have the effect of confining the fluctuations to reasonable and natural figures, as has been the case with oil and other commodities that have been intelligently provided for. There may be opposition to such an organization and the changes it aims to bring about, as there have been to every movement to facilitate business, but all well-directed innovations that have had for their foundation the regulation of inequalities and saving of expense and time have been of permanent success.

### The Stove Association.

The annual meeting of the National Association of Stove Manufacturers occurs in Chicago on the first Wednesday in February. To this meeting not only are the members of the association invited, but also stove manufacturers in general. It will be the eighteenth annual convention of the association, and is expected to be one of the most interesting and profitable meetings ever held. The headquarters are to be the Palmer House, and ample arrangements have been made for the accommodation of members and friends. The proceedings open at 11 a. m. of the day named. The subjects which are to be brought before the meeting through reports of committees appointed by the president are: 1, Revised Constitution for the Association; 2, Co-operation Among Stove Manufacturers; 3, The Method of Ascertaining Costs; 4, The Permanence of a Paid Secretary; 5, Over-production; 6, Prices for 1889; 7, Traveling Salesman; 8, Consolidation or Trusts; 9, A New Bankrupt Law; and, 10, The Apprentice System. In a notice of the meeting issued by the secretary, D. M. Thomas, all these subjects are prominently set forth. The following is the substance of a circular letter issued to the trade by Mr. George H. Barbour, president of the association:

An earnest desire to carefully protect the interests of our organization, and to ascertain the real condition of business as it exists to-day, which appears anything but satisfactory, leads me to request that each manufacturer strenuously endeavor to ascertain for himself and communicate to me the cause of the existing depression. It may be truly said that to discover the evil is much less difficult than to prescribe the remedy, but as correct ideas must necessarily precede successful action, compliance with my request and the intelligent co-operation of members of our craft will supply such a fund of information as will prove an invaluable aid in determining our future course.

The annual meeting of the association occurs at Chicago on the first Wednesday in February. To this every stove manufacturer, whether member or not, will be invited. The usual notice will be given by the secretary. It is of the utmost importance that there be a numerous attendance; indeed, I hope for the largest representation we have ever had. The subjects to be discussed are of great interest, es

pecially those upon which the committees have been at work since the Pittsburgh convention, such as the "Cost Formula," the "Revised Constitution," the "Bankrupt Law," &c. We are all affected by these, more or less, and they cannot be too thoroughly considered.

Let us come to this convention prepared to give careful attention to every subject introduced, not acting as though our organization were valueless because it does not palpably accomplish all that we think it should. No one can really know all that it does effect, or how great its actual value is, as a large part of its influence and much of its work is indirect and unseen; but there can be no doubt that were it dissolved it would be very sadly missed, and great injury to the trade result in less than a year's time. I therefore urge that every member and each of those invited should attend the convention and take such part in the discussions as he feels competent to do, thus advancing his individual interests by promoting the general interest of the trade.

I invite you, whether a member of the organization or not, to correspond with me between now and the date of the convention, communicating fully and freely your views upon all trade topics. Such a correspondence cannot but open up new lines of thought and enable me to formulate plans and offer suggestions valuable to all concerned. A free interchange of opinions and suggestions is always productive of beneficial action, and our trade really needs all the stimulation that can be given it. Particularly valuable and correspondingly prized will be communications from and correspondence with the smaller stove founders, especially such as have not usually visited our conventions and whom I do not have the opportunity of meeting personally; their experience, needs and wishes will have my most careful attention, and it will be a great pleasure and afford me considerable satisfaction if I can aid in conserving their interests; no effort on my part to this end will be wanting.

David Wetmore, the well-known iron merchant and friend of the public school system, died at his residence, 119 Lexington avenue, Thursday afternoon. The immediate cause of his death was paralysis, but he had been ailing ever since Christmas Day, 1884, when he was run over and severely hurt by a wagon near his home. Mr. Wetmore was born in Liberty street, this city, December 31, 1823, and when a very young man entered the firm of Wetmore & Co., one of the oldest houses in the iron trade, in which his uncle, the late A. R. Wetmore, was senior partner. He was made a School Commissioner by Mayor Havemeyer, and served in the Board of Education for 13 years, during the greater part of which he was chairman of the Nautical School Committee.

The first steel postal car ever constructed has just been finished at the railway shops at New Albany by the American Fire-Proof Steel Car Company. It is built of plates of steel, lined with asbestos, and is admirably braced by means of steel rods running the entire length of the car, the rods being fastened by an ingenious device into the steel posts. The floors are of steel, as are the platforms and steps, and there is no wood whatever about the car except the timbers of the trucks.

The Passaic Rolling Mill Company, of Paterson, N. J., have decided to add two 20-ton open-hearth steel furnaces to their plant, at a cost of about \$100,000.

Among experts employed by a committee of the Legislature to examine the Assembly ceiling at Albany are several prominent architects from New York City.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., January 29, 1889.

It is now conceded on all sides that no action will be taken on tariff matters in the House which will lead to concurrence between the upper and lower branches of Congress. An effort was made when the Senate substitute reached the House a few days ago to waive the usual parliamentary routine of reference to the Committee on Ways and Means. The majority members of that committee, led by Chairman Mills and Representative McMillan, opposed the programme of asking a conference without a reference, while Representatives Reed and McKinley, of the minority, urged its adoption as a cross-cut to bringing the question down to a basis of negotiation with a possible prospect of a solution through a mutually acceptable proposition of compromise.

It was thought by the conservative members of both sides that there might be features in both measures, the House bill and the Senate substitute, which might afford an opening to a fusion bill which would be satisfactory to the conference, and in which the two Houses would concur.

Pending this debate, Representative McKinley submitted views on the subject which were interpreted to represent the position of General Harrison. He urged the compromise plan as a way to a settlement, and which would avoid an extra session, as there would be no chance of agreement if the bill was thrown into Committee on Ways and Means. It was also urged that this would put a stop to industrial agitation for some time. The Ways and Means majority, seeking to cover themselves from the chagrin of the Tobacco bill reference to the Committee on Appropriations, insisted upon the reference to their committee, promising a report forthwith. The bill and amendments were so referred, and the question now is as to the action of the committee.

The Cowles Tobacco bill, referred to Mr. Randall's Committee on Appropriations, may be regarded as abandoned. Chairman Randall is not disposed to antagonize his own party by widening the breach on the tariff issue, and he has discovered that it would be impossible to secure a majority of the committee on any measure.

The Committee on Appropriations are sadly broken up. The nine Democrats are not a unit on the Cowles bill, and the six Republicans are a unit on the Senate substitute, which they will put forward with a minority report if Mr. Randall undertakes to make a move on the Cowles measure. The death of Mr. Barnes, of the committee, would add to the complications. If the chairman should make an attempt to report back the bill he would find himself in a hopeless minority. A poll of the committee by friends of the Ways and Means shows that if the issue were made seven Democrats would oppose a favorable report of the Cowles bill, the six Republicans would favor the Senate substitute, which would leave Chairman Randall in favor of the Cowles Bill without any following. The chairman appreciates the situation and will not take any steps. Therefore, the spurt of the tobacco men comes to naught.

The question, therefore, reverts to the Committee on Ways and Means, with a promise that the bill and amendments will be reported back in time to receive action by this Congress. The carrying out of this purpose will in all probability close up the tariff agitation of the Fiftieth Congress with a lively display of parliamentary skirmishing. The Republicans are not willing to permit the Democrats to secure

any prestige from tariff action, and without them the tobacco men are powerless, as they represent but a mere squad as compared with the strength of their party on the other side.

A subject of greater importance than the defunct tariff issue in Congress is the selection of a Secretary of the Treasury for the new Cabinet. The preference of the President-elect and the choice of the Republicans generally is Senator Allison, of Iowa, but the Senator himself wisely feels great reluctance, and his friends are outspoken in their opposition to his acceptance. The Senator has never even entertained the thought of leaving the Senate with any degree of complacency, and he has only regarded it at all in the light of a personal sacrifice to relieve the new President of an embarrassment arising from two causes: (1) his desire to make the selection of his fiscal minister from the West, and (2) the factional hostilities in New York, which would preclude a selection from that direction should he desire to look that way.

The friends of Senator Allison assert with great force that he is the representative man of the Western idea of the tariff. He has done more to build up a protective tariff sentiment in the West than any other person of that section in public or private life. During the transition stage of public sentiment from war tariffs and taxation to revenues based upon the requirements of peace, he held his State in line in favor of the protective policy. The West has followed the course of Iowa until we find that great section as strongly allied to the American idea as the Middle States, and as much or more so than some sections of New England. William B. Allison was the chief instrumentality in bringing about this condition of public opinion in the West on economic questions.

Senator Allison, ever since his interview with General Harrison *en route* to Washington after the election, has felt that his place would be in the Senate. He despaired of concurrent action on the tariff, and therefore felt the importance of remaining in the Senate to co-operate in legislation which would be certain to come up in the next Congress. Although the diurnal grist of speculation from Indianapolis puts him down as having accepted the Secretaryship of the Treasury, his closest friends are still confident that he has not and will not accept the position, but that he will remain where he is, with a prospectively upward promotion in 1892, instead of downward promotion now. The declination by Senator Allison would leave McKinley, of Ohio, as the most available man from the West for the portfolio of the Treasury. It is expected before another week rolls around that something tangible will have transpired on the question of the Chief of the Department which regulates the revenues, recommends tariff legislation, and interprets tariff schedules.

The talk of the Pittsburgh Steel Casting Company about turning out another steel gun creates some discussion in ordnance circles. The army and naval experts, however, discourage the step until the Thurlow gun, which will be of open hearth steel shall have been tested. While the projectors of this style of ordnance have not lost faith in their projects, the officers and men who would be compelled to risk their lives in using such guns do not show any degree of enthusiasm in that direction.

Shipbuilding revived remarkably in Great Britain during the year 1888, reaching 908,687 tons, against 637,000 in the previous year, and, except in two previous years has never been greater than in the year just expired.



# TRADE REPORT.

## Chicago.

Office of *The Iron Age*, 95 and 97 Washington street, CHICAGO, January 28, 1889.

**Pig Iron.**—The tonnage of the market has not improved in the past week. The very low level which prices have struck has, however, induced a number of consumers to place contracts who would otherwise have hesitated longer. Efforts were made, without success, to buy special brands for long deliveries at present prices, the makers being willing to sell only for early shipment and taking their chance for a better price later in the year. This will not happen unless production has been sharply curtailed and consumers realize that the supply is not greater than the demand. In the meantime it will be remarkable if prices do not go lower. Consumption is decreasing rather than increasing, and stocks in foundrymen's yards are shrinking very slowly. Still it does not seem possible that much more of a decline can take place at this particular point than has already been experienced. But the fact must not be overlooked, in considering the situation, that if the coke strike threatened on the 1st of February in the Connellsville region actually takes place an immediate restriction of production, and much greater than if caused by the mere condition of the Pig Iron market, will be made. Should the strike last from two to three months the price of Pig Iron would advance considerably, to the benefit of Southern furnacemen and others not dependent on the Connellsville region for their fuel. Lake Superior charcoal shows no change in price, being apparently as firm as ever. Several contracts for round lots are pending. It is understood that some sales of high numbers recently alleged to have been made at other points were not consummated and the parties are now in the market. Cash quotations on ordinary lots are as follows, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2 and 3, \$20; American Scotch (Blackband), No. 1, \$19 @ 19.50; No. 2, \$17.50 @ \$18; Jackson County Silvery, No. 1, \$17.50 @ \$18; other Ohio Soft Irons, No. 1, \$17 @ \$18; Lake Superior Coke, No. 1, \$16.50 @ \$17; No. 2, \$15.50 @ \$16; No. 3, \$14.50 @ \$15; Southern Coke, No. 1 Foundry, \$16 @ \$16.50; No. 2 Foundry and No. 1 Soft, \$15.25 @ \$15.75; No. 3 Foundry, \$15; No. 2 Soft, \$14.25 @ \$14.75; Gray Forge, \$14 @ 14.50.

**Bar Iron.**—While a fair volume of business is reported for the week, prices have been barely sustained. Values are tending downward, but the decline seems to be stubbornly resisted by the manufacturers, who are acting very conservatively and yield only when they must. The prices which some of them are quoting indicate that they are either indifferent about new business or that they have strong faith in an early recovery from the prevailing depression. They name 1.75¢, half extras, f.o.b. Chicago, for mill lots, and will take no less. Others quote 1.70¢, and this appears to be the going price for ordinary specifications for good Common Iron, shaded, of course, for desirable orders. Small lots continue to sell at 1.90¢ @ 2¢ from store, according to quantity and quality.

**Structural Iron.**—Business is quiet and prices are easier. In the case of Beams, however, the situation seems to have changed and rumors are current of an advance to be made to 3¢. Mill lots are quoted as follows, f.o.b. Chicago: Angles and Sheared Plates, 2.12½¢ @ 2.15¢; Universal Plates, 2.20¢; Tees, 2.45¢

@ 2.55¢; Beams and Channels, 2.90¢; Small lots from stock sell at the following rates: Angles, 2.25¢; Tees, 2.70¢; Beams, 3.50¢ for domestic.

**Plates, Tubes, &c.**—A number of contracts for considerable quantities of Plates are pending, but the parties seem to be in no hurry to close. Current trade is very light. Small lots sell as follows from store: Sheet Iron, Nos. 10 to 14, 2.50¢; Sheet Steel, 3¢ @ 3.50¢; Tank Iron, 2.40¢; Tank Steel, 2.60¢ @ 2.75¢; Shell Iron, 3¢; Shell Steel, 3.12½¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢. Boiler Tubes, 62½¢ off.

**Sheet Iron.**—Both Black and Galvanized are in very moderate demand at present. Prices are unchanged, small lots of Black being quoted at 3.10¢ for No. 24 to 3.30¢ for No. 27, and Galvanized at 65¢ off for Juniata and 65¢ and 2½¢ off for Charcoal.

**Merchant Steel.**—Prices of Tool Steel are slowly settling to their old basis of values before the formation of the association, with but little business offering. Quotations are as follows: Bessemer Bars, 2.30¢; Tool Steel, 8¢; Specials, 13¢ @ 25¢; Crucible Spring, 3.75¢; Open-Hearth Spring, 2.25¢ @ 2.50¢; Open-Hearth Machinery, 2.30¢ @ 2.40¢; Tire, 2.25¢ @ 2.50¢; Sheet, 7¢ @ 10¢.

**Steel Rails.**—The sales on account of the local mills during the week aggregated about 10,000 tons. Other contracts are pending. The situation is still unchanged, a light year's business being indicated. Prices are firm, however, at \$30 for large lots and \$30.50 for small quantities.

**Old Rails and Wheels.**—Old Iron Rails are very dull. Nothing has transpired during the week to establish prices, but dealers quote them nominally at \$21 @ \$21.50. Some inquiry is noted for Old Car-Wheels, and a small lot was sold for \$19.50. This, however, could not be obtained for any considerable quantity, buyers offering \$19.

**Scrap.**—Trade is very limited. Mixed Country is worth \$14. Carefully Selected is offered at the following rates by city dealers, \$ ton of 2000 lb: No. 1 Railroad Wrought, \$20 @ \$20.50; Track, \$19; No. 1 Mill, \$14 @ \$15; No. 2 Mill, \$10; Horseshoes, \$18.50; Axles, \$26.50; Machinery Cast, \$13.50 @ \$14; Stove Plate, \$10 @ \$11; Cast Borings, \$8.50 @ \$9; Wrought Turnings, \$10.50 @ \$11; Axle Turnings, \$12.50 @ \$13; Coil and Leaf Steel, \$15 @ \$16; Tires, \$16; Mixed Steel, \$10.50 @ \$11.

**General Hardware.**—An excellent demand is reported in every branch. The Shelf Hardware jobbers state that their trade is increasing steadily. The Heavy Hardware jobbers are doing a much better business than last year at this time. Those who handle specialties also report a very encouraging influx of orders from every section reached by them. Aside from this there are no special features to note.

**Nails.**—Manufacturers' agents for Steel Nails are expecting an advance of 5¢ or 10¢ in the factory price to be declared this week. Pointers have been freely given to customers, and the placing of orders has thus been stimulated to some degree, but not enough to make trade very active. The charge having been made that the Calumet Iron and Steel Company are cutting prices, they state that although they do not belong to the association they are as deeply interested as any of the members in keeping prices up, and that they are doing so, relying upon the quality of their product to give them their share of orders. Jobbers are doing a very good business, but their prices are still un-

settled. In view of the anticipated advance by the manufacturers, some of the jobbers are now taking a firm stand against anything less than \$1.95 for carloads and \$2 for small lots. Wire Nails show no improvement in price, although some manufacturers have declared themselves out of the market, having orders which will absorb their capacity for two months, and others are endeavoring to make \$2.40, Chicago, the bottom rate for large lots. With one or two concerns naming lower figures, and as low as any thus far made since the break, an actual advance is decidedly retarded. Jobbers quote \$2.50 as the regular price from stock, with \$2.45 for mixed carloads.

**Barb Wire.**—The demand is still improving, but prices are not better. In fact, large lots can now be bought from the manufacturers at lower rates than those named in December, but it is not likely that this condition of affairs will continue any length of time. A heroic remedy is being administered to cure a very stubborn disease. Jobbers quote Painted at 2.90¢ and Galvanized at 3.50¢, with 10¢ @ 100 lb off for carloads.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., January 28, 1889.

**Pig Iron.**—A considerable amount of business has been done during the past week, the larger proportion, however, being at what may be called "cut rates." Some brands still command firm quotations, but in the majority of cases the lots are small, or under a guarantee of protection in case of any general reduction in prices before deliveries are completed. This, of course, shows a great want of confidence, and is almost equivalent to a decline, although there is still a possibility that such a contingency may be avoided. Much will depend on developments the next two or three weeks. A great deal of Iron is being consumed, and so far as this section is concerned there is no serious overproduction, but the market cannot take the large offerings from other sources without displacing similar quantities of the home product. Price, therefore, becomes an important factor. Some fair-sized lots of Southern Irons have been taken within the past month or six weeks, probably 15,000 tons in all, besides a considerable amount of Western Foundry Iron in small lots. This in addition to the usual accumulations during the holiday season has caused steadily increasing stocks in this vicinity, and brings furnacemen face to face with the question whether they will meet the prices made for outside lots, or limit their output and maintain prices and lose a portion of their trade. Some leading concerns will undoubtedly accept the former alternative; others cannot do so without involving serious loss, and will probably "blow out" their furnaces. Meanwhile the feeling is very unsettled, with a probability of its continuance until some adjustment is made to meet the conditions which we have endeavored to define. For the near future, prospects are not at all encouraging, although it is claimed that some of the more urgent sellers having placed their product, prices are likely to be somewhat steadier. There may perhaps be a slight reaction from the pressure of the last week or two, but, at the moment, the chances are that it will be only temporary, until some of the accumulations are absorbed, and that is hardly likely until there is a much better demand or a considerably reduced production, either of which involves time. In regard to current prices, there is variety enough to satisfy the most exacting, the extremes for good to choice brands being \$15 to \$17 at tide for Gray Forge, and \$17 to \$19 for

No. 1 Foundry, with the majority of sales at from 50¢ to 75¢ per ton above the inside quotations. Several lots of 1000 tons each of Gray Forge, including both local and Southern brands, were taken at \$15 @ \$15.25 delivered in consumers' yards, and No. 1 Foundry at \$17.50 @ \$18, although Southern No. 1 could be had at \$17, rail or steamer, for February and March shipments. Smaller lots of local brands have been taken at \$15.50 @ \$16 for Gray Forge and \$18 @ \$18.50 for No. 1 Foundry, but, as already stated, buyers will not take large lots unless guaranteed against a decline.

**Foreign Iron.**—Prices are too high to permit of business being done in this market. Asking rates are as follows: Bessemer, \$20, c.i.f., duty paid; Speigeleisen, \$27.25.

**Blooms.**—There is a good demand at prices quoted for some time past—viz.: Steel Nail Slabs, \$28.50 @ \$29, at mill; Billets, from \$32 to \$36, according to analysis; Run-out Anthracite, \$42 @ \$44; Scrap Blooms, \$32.50 @ \$34 per "bloom" ton of 2464 lb.

**Muck Bars.**—Market unsettled. There is more disposition to buy, but bids are not over \$26.50 @ \$27 at mill for good Bars, while sellers ask about 50¢ more.

**Bar Iron.**—The market has been somewhat more active, but without any indication of improvement in prices. The chances in this respect seem to be a shade more favorable, however, and as the mills get more orders on their books a little stiffening in values will naturally follow. It is not known that any large orders for Bars have been placed, although some of the mills claim to have had the offer of lots aggregating over 2000 tons, which they declined, more on account of dates for delivery than because of prices. A few large Skelp orders have been distributed around (about 2000 tons among local mills), so that things are more active, if not more remunerative. Prices, as already stated, are no better, and range from 1.75¢ to 1.85¢ for good to best quality of Bars, and 1.8¢ for Grooved Skelp, although large buyers expect to shade even these low prices, and have done so in cases in which new business was urgently needed.

**Plate and Tank Iron.**—Business in Plates is very disappointing. Some of the largest orders given out within the past month or six weeks were taken by Western mills, so that local concerns have been able to secure only small orders, and are therefore always on the lookout for new business. The result is low prices, with no immediate prospect of improvement. Prices are nominally unchanged, but on large lots concessions are not unusual. Quotations about as follows: 1.95¢ @ 2.1¢ for Ordinary Plates and Tank Plates, 2.1¢ @ 2.2¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.2¢ @ 2.3¢; Shell, 2.7¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢.

**Structural Iron.**—The market is very quiet, with nothing but small orders coming on the market at present. Some of the mills are busy on old contracts, but there are more that are running close to the end of their order books, hence prices are irregular and somewhat weak, although quoted as before—viz.: Bridge Plate, 2¢ @ 2.1¢; Angles, 2¢ @ 2.1¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢ for Iron or Steel.

**Sheet Iron.**—A fair amount of business has been done, some pretty large lots having been taken on private terms. The market is steady at the following quotations:

Best Refined, Nos. 26, 27 and 28....3 @ 3½¢  
Best Refined, Nos. 18 to 25....2½ @ 3 ¢  
Common, ¼¢ less than the above.  
Best Bloom Sheets, Nos. 26 to 28....4½¢ @ 4½¢  
Best Bloom Sheets, Nos. 22 to 25....3¾ @ 4 ¢

Best Bloom Sheets, Nos. 16 to 21....3¼ @ 3½¢  
Blue Annealed.....2.6 @ 2.8¢  
Best Bloom, Galvanized, discount.....62½ %  
Common discount.....67½ %

**Merchant Steel.**—There is a good demand at about the following quotations: Tool Steel, 8½¢ @ 10¢; Machinery, 2½¢ @ 2¾¢; Crucible Spring, 3¾¢; Crucible Machinery, 5¢; Best Sheet Steel, 10¢ @ 12¢; Second Quality 8½¢; Third Quality, 6½¢.

**Steel Rails.**—Business is very quiet and orders for fair-sized lots appear to have been taken at something less than quoted rates. In Eastern Pennsylvania \$28 at mill is claimed to be an inside rate, but orders from some of the Southern roads have been worked from Pittsburgh at what appears to be about \$27 at mill, unless special rates have been made with the transportation companies. The feeling is unsettled, with \$27.50 @ \$28 quoted for large orders.

**Old Rails.**—There is no change from last week, the market being quiet, but at firm quotations. Shipments would command about \$23.50 for T's or \$24 for spot lots, but sales have been chiefly for interior delivery, at about \$24.50 laid down at mills. Stocks are light, and holders very firm. Spot lots, \$24.25 bid to-day.

**Scrap Iron.**—The market is a little quiet, but there is no quotable change in prices, which remain as follows: \$20.50 @ \$21 for cargo lots; \$21.50 @ \$22 for carload lots, delivered, or for choice \$22.50; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish Plates, \$25 @ \$26; Old Car-Wheels, \$17 @ \$18, Philadelphia, or its equivalent.

**Wrought-Iron Pipe.**—There is a good deal of business doing, but prices are still irregular and unsatisfactory. Discounts are nominally unchanged, but on desirable orders concessions are frequently made. Quoted discounts nominally Black Butt-Welded, 52½ %; Galvanized do., 42½ %; Black Lap-Welded, 62½ %; Galvanized do., 52½ %; Boiler Tubes, 60 %.

**Nails.**—The demand is very light, as is usual at this season. Prices are unchanged, but very irregular, varying from \$1.75 to \$1.90 at mill for carload lots. Store prices remain at \$1.90 @ \$2. The agreement to restrict production is likely to be consummated shortly; meanwhile there are more Nails being made than can be sold at quoted rates.

J. W. Hoffman & Co., Philadelphia, who have for the past 17 years been located at 208 South Fourth street, will remove their offices to 333 Walnut street, and will have larger facilities for handling their increasing trade in Iron and Steel of all descriptions. J. Ogden Hoffman has been appointed Philadelphia agent for Carnegie, Phipps & Co., Limited, and Carnegie Bros. & Co., Limited, Pittsburgh, Pa. H. will also be located at 333 Walnut street.

## Birmingham.

BIRMINGHAM, ALA., January 28, 1889.

**Pig Iron.**—There is absolutely nothing new in the Iron situation as regard prices, and trade is quiet. Stock on hand is light at all the furnaces, there having been quite a diminution since the first of the month filling orders ahead. There are two causes which operators believe may tend to make an improvement in the situation—viz., the Hull storage scheme and the sliding freight scale.

There is a much better feeling over the financial situation since the last report. Birmingham's greatest burdens—obligations on real estate speculation—are being very appreciably lightened, notably with-

in the last few days. As reported in *The Iron Age*, the depression in the business generally is attributed to the dullness in railroad building and the demand for such supplies.

## Louisville.

LOUISVILLE, KY., January 28, 1889.

**Pig Iron.**—There have been a number of sales effected during the last week for delivery through the year. Prices continue low, with little prospect of an advance. Some of the leading furnaces are accepting orders for the year's delivery, believing that they cannot hope for an important change, and that, until the weaker furnaces are forced to go out, the market will continue depressed. The buying during the week has been largely among stove foundries and machine companies, and for future delivery, though their purchases for a year's supply are not as large as usual, as from the present depression there is a decided falling off in orders. We quote as follows:

Southern Coke, No. 1 Foundry, new classification.....	\$14.75 @ \$15.25
Southern Coke, No. 2 Foundry, new classification.....	14.25 @ 14.75
Southern Coke, No. 3 Foundry, new classification.....	13.75 @ 14.25
Gray Forge.....	13.25 @ 13.75
White and Mottled, different grades.....	12.75 @ 13.25
Silver Gray, different grades.....	13.00 @ 13.75
Southern Charcoal, No. 1 Foundry.....	16.25 @ 16.75
No. 1 Mill.....	14.75 @ 15.25
Southern Car-Wheel, standard brands.....	21.75 @ 22.75
Southern Car-Wheel, other brands.....	15.00 @ 19.50
Hanging Rock Coke, No. 1 Foundry.....	15.50 @ 16.00
Hanging Rock Charcoal, No. 1 Foundry.....	19.50 @ 21.00
Hanging Rock, Cold Blast.....	20.75 @ 23.75

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, January 28, 1889.

**Pig Iron.**—Very low prices have been made for Pig Iron in the local market during the past week, even lower than those reported in our last review. But sales have increased materially, some very large contracts having been closed during the past few days. These purchases have been made not alone by actual consumers, but some large amounts have been taken for speculative account. An analysis of the present market is no easy task. The tone is unsettled, and interested parties modify their views with each new report, giving prices an unstable character. Of course all agree that a reaction is bound to come sooner or later, but there is no unity of opinion that the bottom has been touched. Those buying upon speculative ideas admit the possibility, and even the probability, of lower prices, but the fact that the market is at a lower point than for many years gives them courage to buy for "long" account. Large consumers, especially Pipe works, which have large orders ahead, have shown confidence, to some extent, in making contracts for large amounts, but they have secured the benefit of time, the length of which gives some assurance of a profit upon purchases, as well as upon their manufactured article. A few sellers announce their belief that the market is at bottom, and that they prefer to wait awhile before parting with holdings; but it is noteworthy that these gentlemen have just sold liberal amounts of Iron. The majority of producers, if their sentiments are reflected with accuracy, will not be surprised to see a further material decline. One of the largest producers in the South, and one credited with unusual foresight, is reported to have said that the present demoralization will continue and prices will decline until furnaces which ought not to make Iron—those which have little or no capital of their own, but are operated on borrowed capital—are compelled to blow out. This means a war of extermination, or a natu-



ral weeding out process, a "survival of the fittest," according as it is viewed. The sales made here or consummated through Cincinnati agents during the past week aggregate about 50,000 tons, for delivery ranging from two to six months, some contracts being reported made extending throughout the year, but a majority of the transactions cover about four months; of this amount speculators are said to embrace nearly 20,000 tons, the remainder being made up of lots ranging from 1000 and 2000 to 7000 tons. No. 1 Southern Coke Foundry Iron is reported at \$14.50 @ \$15; No. 2 do. at \$14 @ \$14.50; No. 3 do. at \$13 @ \$13.50, but the inside prices are not openly named. Forge Iron at \$12.50 @ \$13 and Mottled at \$12. Many mixed lots, too, have been sold at varying rates. Dealers as a rule adhere to old "list" prices in their published reports. Northern Iron has sympathized more with the Southern product, and even Wheel Iron has ruled easier under less liberal orders. The following are the approximate prices current here at the close for cash, f.o.b.:

<b>Foundry.</b>	
Southern Coke, No. 1 (new classification).....	\$14.75 @ \$15.00
Southern Coke, No. 2 (new classification).....	14.25 @ 14.50
Southern Coke, No. 3 (new classification).....	13.50 @ 14.00
Ohio Soft Stone Coal, No. 1.....	15.00 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 15.00
Mahoning and Shenango Valley.....	16.50 @ 17.00
Hanging Rock Charcoal, No. 1.....	21.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 22.00
Tennessee and Alabama Charcoal, No. 1.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 2.....	17.00 @ 18.00
<b>Forge.</b>	
Strong Neutral Coke.....	13.00 @ 13.50
Mottled Neutral Coke.....	12.00 @ 12.25
Gray Forge.....	12.50 @ 13.00
<b>Car-Wheel and Malleable Irons.</b>	
Southern Car-Wheel.....	20.00 @ 25.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @ 22.00

**Manufactured Iron**—Has been moderately active and steady, without new features of prominence.

**Nails.**—The market has been without animation, and easy in tone: 12 @ 40d sell at \$1.90 @ \$1.95  $\frac{3}{4}$  keg, with 10¢ rebate in carload lots at the mills. Steel Nails sell at \$1.90 @ \$1.95, and Steel Wire Nails at \$2.60 @ \$2.65  $\frac{3}{4}$  keg.

**Old Material.**—There has been little trading, and prices have been nominal. Old Rails are difficult to sell at \$21.50 @ \$22, and Old Wheels are quotable at \$18 @ \$18.50, cash, here.

Kroger, Redway & Co. announce that, having succeeded to the business of R. J. Kroger & Co., they will continue to occupy the old office, Room No. 1, Allen Building, Fifth and Main streets. They are agents for the Schoonmakers Connellsville Coke, best grades of West Virginia and Ohio (Soft) Coke, and (Barton Mine) Piedmont Smithing Coal, favorably known as Cumberland Blossburg. They also deal in Iron Ore, Mill Cinder, Scrap Iron and Rails.

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, January 28, 1889.

**Pig Iron.**—A correct report of the condition of the market at the present time would result in an "unknown quantity," and all the algebraic rules ever invented would not give a correct solution of the problem. Rumors of sales of large round lots at distressingly low figures are flying around in every direction, but careful inquiry of the alleged sellers results in the fact that no such sales have been made. The Tennessee Coal and Iron Co. were reported to have offered Nos. 1 and 2 Foundry at very low prices, but got no takers, when the truth of the matter is that

they have not a pound of No. 2 to offer for delivery under 60 days and No. 1 under 90 days at any price. A party from the North visited the Southern districts prepared to buy 25,000 to 50,000 tons for spot cash, and expected to get no No. 1 for about \$12 @ \$12.50, and Gray Forge for about \$10 @ \$10.50, but has left the field without buying a pound. The fact is there is no such priced Iron for sale in the Southern districts. Many of the furnaces are all sold up and those that are not are realizing profitable figures on what sales they are making, or are stacking their output. It cannot be denied but what prices have receded, but the statements made by many that prices have gone to the figures reported cannot be substantiated by facts. \$13 @ \$14 is the basis at which No. 1 can be bought for now, about 50¢ @ 75¢ less for No. 2 Foundry, and there are some who will not sell at these figures. The failures at Nashville and Sheffield have been discounted for a long time by those who were on the inside and have created no surprise.

**Miscellaneous.**—The past week or two has developed quite an active stir in business, and the future is looked upon as a period that will develop an active season in all mercantile lines.

## Cleveland.

CLEVELAND, January 28, 1889.

**Iron Ore.**—The local representatives of the big mining companies in the Lake Superior district steadfastly maintain that no steps affecting the prices for Ore for 1889 have yet been taken. While asserting that the opening prices for Ore will, in all probability, be about 25¢ or 50¢ above those of 1888, it is confidently claimed that active inquiries from the furnacemen are not expected for at least three weeks to come. This feeling on the part of the Ore dealers is due in no small measure to the fact that many Eastern furnaces, especially those along the line of the Lehigh Valley road, are determined to buy their supplies of Ore on this side of the Atlantic. Their determination to substitute domestic for foreign Ore means, it is claimed, a total output in the Lake Superior region of at least 6,000,000 tons of Ore in 1889. The Ore receipts at Buffalo in 1887 were but 30,700 tons. Last year they were 247,000 tons. With the increased dock facilities, prepared by the Lehigh Valley Company, and with the furnaces at Syracuse, Troy, Ironton and elsewhere demanding native Ores, the Buffalo trade this year is not unlikely to reach 600,000 tons. This phase of the situation in a measure accounts for the apparently disinterested position of the mine owners who now claim that they can well afford to await the demands of the furnacemen. The little stacks of unsold Ore on the docks are being rapidly disposed of, less than 35,000 tons now remaining in the possession of the dealers. Fully 30,000 tons of Ore were shipped to the furnaces last week.

**Pig Iron.**—The tone of the market is slightly improved, Ohio Coke Irons, at a reduction of 50¢  $\frac{3}{4}$  ton, being in fair demand, and Car-Wheel Irons, at about the same sacrifice, finding quite a number of purchasers. As long, however, as the furnacemen are not compelled to enter the market the demand is bound to continue light, and substantial orders will be few and far scattered. The sacrifice in prices is far from universal, many furnacemen declining altogether to make concessions for the sake of orders. Buyers, in looking after current needs, are less solicitous than might be expected about obtaining low prices, and few sales of small lots have occurred below 50¢ reduction from the long-prevailing quotations for standard

Irons. Many foundries are looking forward to good orders for Iron in the architectural line.

**Scrap Iron.**—Old American Rails are selling in small lots at \$24.25. The market as a whole is dull, and sales of all kinds are scattering.

**Nails.**—Steel Wire Nails at \$2.40 are about the only articles in the market enjoying any degree of demand. Business with both jobbers and store men is limited.

**Manufactured Iron.**—A majority of the dealers are firm in the belief that Bars, Plates and Sheets will be selling freely before March 1. The market at present is lifeless, and Common Bar does not command prices in advance of 1.60¢.

[Later by Telegraph.]

Interviews with the principal consumers in the Mahoning and Shenango valleys reveal their willingness to pay last season's opening prices for new Ore. A dozen different mining companies are following the established custom of waiting for the Republic mine to fix prices before announcing their schedule of rates. Not a pound of new Ore has been sold. A representative of the Carnegie interests said this morning that letters had been received from several mining companies relative to new Ore, and that replies were sent indicating the Carnegie company's readiness to buy at the mine-owners' prices. It is rumored to-day that the Republic will announce \$6.25 as its opening price. The depression in the Rail and Bessemer-Pig markets will, it is said, operate against high prices for Bessemer Ore at the beginning of the season. Representatives of the large Pig-Iron interests in Ohio and Pennsylvania go to New York to-night to protest against the increased freight on Pig Iron ordered for February 1.

## Detroit.

WILLIAM F. JARVIS & Co., under date of January 28, 1889, report as follows: There has been an absence of any large dealings in this market during the past week. On account of the low offers recently made here by some Southern furnaces and the very low prices at which these Irons have been sold in other sections, buyers are inclined to wait until values are more settled and they can feel sure prices have reached the lowest point. Most Coke Irons are lower in sympathy. While Lake Superior Charcoal is being held at prices asked a month ago, it is a question whether they will not also be affected. Makers of this grade claim that consumption will be fully up to the production, and, therefore, no cause exists for lowering quotations. We quote for the present as follows:

Lake Superior Charcoal, all numbers.....	\$20.00 @ \$20.50
Lake Superior Coke, all ore.....	19.50 @ 20.00
Lake Superior Coke, cinder mixed.....	18.00 @ 18.50
Southern No. 1.....	17.25 @ 17.75
Southern Gray Forge.....	15.25 @ 15.75
Southern Silvery.....	17.00 @ 17.50
Jackson County (Ohio) Silvery.....	18.50 @ 19.00
Old Wheels.....	20.00 @ 20.50

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, January 29, 1889.

There has been no important change in the general Iron and Steel industries during the week under review; trade is still reported dull and unsatisfactory. It is believed that tariff agitation has contributed as much as anything to the dullness that has prevailed of late. Another matter that tends to depress business in the two great industries of Pittsburgh, Iron and Steel, is the fact that a large number of natural gas contracts expire shortly, and if the advanced prices for gas are insisted

upon it is probable that a number of manufacturers will drop the gas and go back to coal.

**Pig Iron.**—The market continues in a depressed and unsatisfactory condition, but it is hoped that there will soon be a change for the better. Consumers have little or no stock, and just as soon as they begin to think that prices have touched the lowest point they will want to contract for future delivery. Furnacemen argue that the point in question has been reached already, and one of the strong points advanced, in view of their position, is that present prices scarcely cover actual cost, with but little prospect of much, if any, reduction in the production. We quote prices as follows:

Neutral Gray Forge.....	\$14.75 @ \$15.25,	cash.
All Ore Mill.....	14.00 @ 14.50,	"
White and Mottled.....	15.50 @ 16.00,	"
No. 1 Foundry.....	16.75 @ 17.00,	"
No. 2 Foundry.....	15.75 @ 16.25,	"
Charcoal Foundry.....	21.00 @ 24.00,	"
Cold Blast Charcoal.....	25.00 @ 28.00,	"
Bessemer Iron.....	16.50 @ 16.75	"

Best brands of city-made Forge Irons are to be had for immediate delivery at \$15, cash; it is doubtful whether furnacemen would contract for future delivery at the price quoted. Foundry Irons continue very dull; Bessemer continues weak; sale 600 tons at \$16.75, cash, and 1000 tons for delivery next month at \$16.50, cash; in the latter there has been a decline of 25¢ to 50¢ per ton within the past few weeks.

**Muck Bar.**—Continues very dull, and prices have further declined; we now quote, in the absence of sales, at \$27 @ \$27.50, cash. We are reliably informed of an offer to sell at \$27. The quotations above noted show a decline of \$1 per ton within a few weeks, and no demand at the decline.

**Manganese.**—Sale of 80 % Ferromanganese at \$55.50 @ \$56, cash; and Spiegel at \$28 @ \$28.50, cash, for 20 %. Demand is chiefly for small lots.

**Manufactured Iron.**—Orders continue to come forward sparingly, but it is hoped and expected that there will be an improvement in the demand before long, and there is every reason to believe that there will be. Prices continue weak and irregular, in sympathy with the raw article. Bars, 1.75¢ @ 1.80¢; Plates, 2.10¢ @ 2.20¢; No. 24 Sheet, 2.80¢ @ 2.90¢, all 60 days, 2 % off for cash. Skelp Iron, 1.75¢ @ 1.80¢ for Grooved, and 1.90¢ @ 2¢ for Sheared.

**Nails.**—There is nothing doing in the Nail trade here; no change in prices. Pittsburgh manufacturers continue to quote at \$1.90 for 12d @ 40d, 60 days; 2 % off for cash, but Wheeling continues to sell at a \$1.80 base, and, while there is difference, Pittsburgh has but little show for business. The Wheeling manufacturers will hold a meeting to-morrow, one of the main objects of which, it is said, is to advance prices. Pittsburgh makers say there is but little margin at the \$1.90 card, and, if so, it is not strange that Wheeling wants to advance prices.

**Wrought Iron Pipe.**—There is a fair business for the season, and but for the manner in which prices are being cut there would be but little room for complaint. A few large concerns are doing the bulk of the business; some manufacturers are not anxious for business at present prices, and but for a desire to hold their trade they would shut down. We quote discounts on Black Butt-Welded Pipe at 55½ @ 57 %; on Galvanized do., 50 and 5 %; on Black Lap-Welded, 65 % @ 67½ %; on Galvanized do., 55 and 2½ %; 2-inch Tubing, 11½¢ per foot, net; 5½-inch Casing, 35¢ per foot, net; Boiler Tubes, 65 % off.

**Old Rails.**—The dullness noted for some time continues, and in the absence of sales it is difficult to give reliable quotations. We hear of offers to sell Amer-

ican Tees at \$24, and it is fair to infer that if offered at the price quoted they could be bought for less. The work of "lifting" has not this winter had to be suspended in consequence of the weather, and the supply has been kept up much better than expected thereby. But for the open winter the course of the market would have been very different from what it has been. Old Steel Rails quoted in absence of sales at \$18 @ \$18.50 for short and \$19.50 @ \$20 for long lengths.

**Steel Rails.**—Are still quoted at \$28 cash orders at mill here, but for a desirable order there is little doubt but what the price quoted would be discounted, as the mills are all anxious for business. While there are those who believe that there will be as many Rails wanted this year as last, others are of a different opinion.

**Billets, &c.**—There is but little inquiry for Bessemer Steel Billets and prices are weak; quoted at \$28, cash, at maker's mills; Nail Slabs \$27.50 @ \$28; Domestic Blooms and Rail Ends, \$18.50 @ \$19, with but little inquiry.

**Railway Track Supplies.**—There is not much inquiry just now, but an improvement in demand is looked for next month. Prices remain unchanged. Spikes, 2.05¢ @ 2.10¢, 30 days, free on cars here; Splice Bars, 1.80¢ @ 1.85¢; Track Bolts, 2.80¢ with square and 2.90¢ with hexagon nuts.

**Merchant Steel.**—No change in prices. Best brands Tool Steel 8½¢; Crucible Machinery, 5¢; Open Hearth do, 2½¢.

**Old Material.**—Is less active and weaker; sales No. 1 Wrought Scrap at \$20.75, net ton; Old Car Axles, \$24.75; Cast Scrap, \$14.75 gross; Old Car-Wheels nominally \$19 @ \$19.50 gross.

## New York.

Office of *The Iron Age*, 66 and 68 Duane street.  
NEW YORK, January 30, 1889.

From every department of the Iron and Steel trades come complaints of a most unsatisfactory state of affairs. Prices, almost without exception, are down to cost for the most favorably situated concerns, and in some instances are decidedly below it. Importations have practically ceased, except in some specialties. Already the number of sellers in many lines is narrowing down to a small number. Among them there is a sharp rivalry, in which ordinary business prudence is often thrown to the winds, and personal antagonism, retaliation and spite are allowed full sway. Such a condition of affairs certainly cannot last long. When more prudent councils prevail, when those so eager for tonnage have been filled, a reaction is sure to set in which will cause a very rapid advance to more reasonable figures. We see no immediate prospect for this change, but all interested in the trade should keenly watch for the slightest indication, since the recovery to at least living rates is likely to come with a rush. It is in the nature of the business that the adjustment to present circumstances is least likely to be very prompt in the case of the Pig Iron manufacturers. A rolling mill or foundry can generally be closed down at short notice and without serious direct loss. It is different with a furnace. Blowing out involves future heavy outlays, without considering that generally furnaces must have long-time contracts for raw materials. One point deserves special mention, and that is the heavy consumption of last year. In spite of the fact that the production slightly exceeded that of 1887, the stocks at the end of the year were only 336,161 net tons on December 31, 1888, as compared with 401,266 net tons on June 30,

and 338,142 net tons on December 31, 1887. Leaving out of account imports, the statistics indicate that our consumption during the second half of 1888 was 3,528,777 gross tons, or, considering accumulations of Bessemer Iron as an offset to lessened imports, at the rate of 7,000,000 gross tons per annum. This was in spite of the heavy falling off in the production of Steel Rails.

**Foundry Pig.**—The market is stagnant, waiting for developments. Low offerings do not appear to tempt buyers, and it is difficult to form any definite conclusions what prices could be realized if an attempt were made to force sales, even of standard brands. Southern Iron has been offered at \$16.50 for No. 1 without having found any takers. As yet no announcement of opening prices has been made by the leading Lehigh company, events being watched closely before any course of action is decided upon. A determination to hold trade is, however, freely expressed. An event, so far as the northern part of this State and certain sections of New England are concerned, is the blowing in of one of the Troy furnaces on Foundry Iron. With a capacity of close upon 1000 tons a week, a cheap Ore mixture, Coke as fuel, and thoroughly modern plant, the furnace will be able to produce good Iron cheaply and make a serious struggle against the Mahoning Valley and Shenango Valley Irons which have secured so strong a hold in that section. We understand that experiments with different mixtures are now being made before the product will come into the market. In reference to the delays in the delivery of Southern Iron, alluded to recently, we are informed that they apply only to the Savannah line, that shipments are prompt via Norfolk, and that the rates are the same—viz., \$3.75 from Chattanooga and \$3.86 from Birmingham to Philadelphia and New York, and \$4 from Chattanooga and \$4.11 from Birmingham to Boston. Southern furnaces have also low freights to a number of interior points in Central and Eastern Pennsylvania. We quote nominally for Standard brands \$17.75 @ \$18 for No. 1, and \$16.50 @ \$17 for No. 2 Foundry.

**Scotch Pig.**—The market continues very dull. The Anchor and State lines have each taken off two steamers, so that now there are only two instead of four monthly from Glasgow; the freights, however, remaining 4/. Coltness, \$20.50 @ \$21; Shotts, \$20 @ \$20.50; Langloan, \$20 @ \$20.25; Summerlee, \$20.25 @ \$20.50 and Dalmellington, \$19.25 @ \$19.50.

**Plates.**—We quote Iron Tank, 2¢ @ 2.2¢; Shell, 2.25¢ @ 2.4¢; Steel Tank and Ship Plate, 2.15¢ @ 2.25¢; Shell, 2.35¢ @ 2.5¢; Flange, 2.6¢ @ 2.75¢, and Fire-box, 3¼¢ @ 4¢.

**Structural Iron.**—The market is quiet, dull and weak. We quote Sheared Plates, 1.9¢ @ 2¢; Universal Mill Plates, 2¢ @ 2.1¢; Angles, 2¢ @ 2.10¢; Tees, 2.4¢ @ 2.6¢, and Channels and Beams, 2.8¢ on dock for all sizes.

**Bar Iron.**—We quote: Carload lots on dock, half extras, Common, 1.65¢ @ 1.75¢; Medium, 1.75¢ @ 1.8¢, and Refined, 1.8¢ @ 2¢.

**Steel Rails.**—During the past week facts have come to the surface which have again considerably unsettled the Steel Rail Market. There has been a sharp struggle over Southern business, the majority of the contracts having been secured by a Pittsburgh mill. The lack of business in the West and Southwest, the inability to obtain work in the Northwest, have apparently, coupled with a desire for a large tonnage, led to an eagerness



to secure Southern orders in territory in which mills further East are supposed to have a commanding position. It is reported that sales have been made on the basis of about \$26 at Pittsburgh mills, rumor having even brought out lower figures, which, however, are not to be credited. The result has been a weakening on the part of some of the Eastern mills, and \$27 is now freely named where \$28 was formerly nominally quoted. One Eastern mill has sold 12,500 tons, Norfolk delivery, at \$28.25, and it is rumored that a Pittsburgh mill has taken 20,000 tons for a new enterprise in North Carolina. An unusual transaction also reported is the sale by an Eastern mill of 2500 tons for Chicago delivery, the price given being \$30.60, equivalent to \$27 at the mill. We note in addition a sale of 1500 tons by an Eastern mill, at private terms. The order for a Virginia road, alluded to in our last report, turns out to have been for 5000 tons with an option of 5000 tons more. It was taken by a Pittsburgh mill. We quote nominally \$27 @ \$27.50 at Eastern mill, with the market in buyers' favor.

**Merchant Steel.**—The market continues demoralized. Spring Steel has sold at \$43  $\frac{3}{4}$  gross ton flat, delivered, 3% off, ten days; Tire, delivered, without extras, 2.05¢,  $\frac{1}{16}$  x  $\frac{1}{2}$  square edge at 2.25¢, delivered.

**Track Material.**—The market is very weak. The sale is reported to a road in this vicinity of 8000 kegs of Spikes, delivered at Albany and Buffalo, at a figure which is below cost and which other makers decline to meet, quoting \$2 @ \$2.05. The same road has purchased 50,000 sets of Steel Angles at private terms. Angles are freely quoted 1.80¢ @ 1.85¢, delivered.

**Axles.**—A circular has been issued by a leading Pittsburgh mill, quoting Axles, master car builders' standard, Iron or Steel, at 2¢, at mill.

**Wire Rods.**—Only a very small business has been transacted, although stocks of Eastern Wire mills are running low. The situation in Germany is peculiar. The large works, which make their own Steel, are indifferent sellers, because they claim to be able to make more money by turning their material into other channels. They either let their Rod mills remain idle or make Bars or light Rails on them. The small works would be glad to sell at present prices if they could get Billets at anything like reasonable prices. The result is that 108 marks @ 110 marks is being asked at shipping port, with freights to this country at 11/ @ 12/. This it is claimed makes it impossible to sell here at less than \$42, while \$41.50 is the highest bid. Direct cable offers have been made of Basic Rods at \$39.50, but they excite suspicion and would only be taken to meet contingencies. Eastern domestic mills are doing something in the larger numbers, No. 0, No. 1, &c., for which there is quite a demand in the aggregate. The higher rate of duty on them forces importers to demand \$44.50, so that the home mills have a good chance to take the business.

**Old Rails.**—On the seaboard Old Rails continue scarce, with some demand, but no sales. We quote \$23 @ \$23.50 for Tees, with the majority of holders very firm.

Frank D. Moffatt & Co., 100 Beekman street, this city, have been appointed exclusive sales agents for the State of New York and the Northern part of the State of New Jersey for the Pig Iron made by the Brier Hill Iron and Coal Company. The well-known Softener, Brier Hill Scotch, is made by this company.

## Coal Market.

The Coal trade is extremely dull in all departments, and stocks at tidewater are accumulating despite efforts to restrict work at the mines. In the Wyoming region the mines are worked on short time only three days in the week, and in the Lehigh region several collieries have suspended altogether. Although Reading has a number of idle collieries the company report a stock of fully 130,000 tons of Port Richmond. For the week ended January 26 the production was 543,392 tons, which is a decrease of 100,000 tons compared with the week ended January 12, but 114,000 tons in excess of the corresponding week in 1888. Since January 1 the production is 83,000 tons larger than for the same time last year. Prices are cut by outside operators to the extent of 25¢ @ 40¢  $\frac{3}{4}$  ton, and sales are reported at even lower figures. The Lehigh and Schuylkill Coal Exchanges decided to maintain present prices during February. D. B. Duncan and Nelson J. Gates were appointed receivers of the Coal firm of M. J. Gaffney & Co., of Brooklyn.

Bituminous Coal is depressed from the effects of excessive production, and occasional sales are reported at the lowest figures, say about \$2.90 alongside. Beech Creek is still outside of the Seaboard Association.

Cumberland production for 1888 amounted to 3,671,067 tons, an increase of 295,000 tons compared with 1887.

The Commissioners of Charities and Correction have given David B. Duncan the contract for furnishing the department with 28,000 tons of Coal during the coming year. His figure was \$3.92  $\frac{1}{2}$   $\frac{3}{4}$  ton, or 6  $\frac{1}{2}$ ¢  $\frac{3}{4}$  ton cheaper than he filled the same contract for last year.

## Metal Market.

**Copper.**—At the time of our last week's report Spot Chili Bars and Good Merchantable still stood £77  $\frac{1}{2}$ ; futures, £78 and Best Selected, £79. 10/. Since then a sudden demoralization and weakness have overtaken the London market, and yesterday spot only brought £73 and futures £75. To-day quite a sudden recovery is cabled, spot being worth £77. 10/ for Chili Bars and Good Merchantable, but futures remain £78. While this change occurred, Best Selected declined from £7.10/ to £77. The first intimation that there was something wrong reached us by cable from Paris, under date of 25th inst., when Rio Tinto shares dropped 67 francs, there being a rumor on the Stock Exchange there that contracts bearing on the formation of the English Copper Company in connection with the French syndicate had fallen through. It is pretty certain that the French syndicate has latterly abstained from buying either futures or spot Copper, but whether its collapse is near at hand or distant is altogether problematical. Of course if Copper were sold on its proper merits, the enormous accumulation of stock on hand would probably not bring more than about £30 @ £40, but experience has taught us that it is dangerous for any speculators to assume that the downfall of the big companies is approaching and sell futures on such assumption. This situation causes hesitation not only to a certain extent in London, but also on this side. What has caused the sudden recovery to-day may possibly be that the syndicate has come to the rescue after perfecting its financial arrangements. Yesterday 25,000 lb of March were sold as low as 16¢, while to-day the same amount sold for 16.40¢. The only bid that can be got for the coming month is 16.25¢, and under these circumstances the spot quotation is practically nominal. For the first 11 months of

last year there was shipped from Spain 756,941 tons of Pyrites, against 701,841 tons in 1887 and 61,834 tons in 1886; of Precipitate it was 26,458 tons, against 25,500 and 24,794 respectively. James Lewis & Son, of Liverpool, in their annual report, say: "The increased production cannot be considered excessive, considering the high price of Copper, but what has surprised the trade is the great falling off in the deliveries of Copper, pointing to a diminished consumption of 37,478 tons in England and France. These reduced deliveries are, however, misleading, and do not represent the actual consumption, as a considerable quantity of old Copper lying in England and France has been worked up during the year—probably 5000 tons; and it must also be borne in mind that smelters and consumers bought largely during the rise toward the close of 1887, and so commenced the year 1888 with considerable stocks, while at present they are holding as little as they possibly can. This difference we estimate at about 15,000 tons. The actual consumption has, therefore, probably been 20,000 tons more than the apparent consumption, making the falling off only 17,478 tons. One of the disadvantages the syndicate labor under is that they have to carry the stock of Copper usually held by the trade."

**Tin.**—The London market has again slightly given way with Spot Tin since our last report, the same declining from £97 to £96. 15/ in the London market, futures remaining unaltered at £97 sterling. There has been some increase of activity in our own market, 10 tons of January selling at 21.60¢; 50 tons February at 21.55¢ @ 21.65¢; 35 tons April at 21.60¢ @ 21.70¢; 10 tons May at 21.80¢; 10 tons, spot, 21.50¢, and this morning 10 tons, spot, at 21.60¢. As the day after to-morrow the statistics for January will be cabled, the market closes to-day quieter and in an expectant attitude. **Tin Plates.**—The market has been quiet, but steady, with more inquiry for both spot and futures, which will probably lead to business in the near future. We quote largelines per box: Siemens-Martin Steel, Charcoal Finish, \$4.75 @ \$5.50; Terns \$4.12  $\frac{1}{2}$  @ \$4.25; Coke Tins, \$4.22  $\frac{1}{2}$  @ \$4.30, and Wasters, \$4.12  $\frac{1}{2}$  @ \$4.15. Liverpool Coke rules 13/ to 13/3. The Board of Trade returns for Tin Plates exported to the United States last year were 292,623 tons, as compared with 268,355 tons in 1887.

**Lead.**—A featureless state of affairs has prevailed during the week, sales not exceeding 400 tons at 3.75¢ @ 3.80¢, the closing quotation being 3.75¢, at which the market winds up with a dull feeling. Out West the quotation was 3.52¢ @ 3.55¢, with quite as dull a state of affairs. In London Soft Spanish has remained steady at £12. 17/6, while English Pig receded from £13. 5/ to £13 sterling. The Lead exportations during the last 11 months of last year from Spain amounted to 118,737 tons, against 121,637 tons in 1887 and 103,149 tons in 1886.

**Spelter.**—Although inactive, our own market remains firmly sustained at 5¢ for Common Domestic, but in London quite a break seems to have occurred in Silesian, which fell from £18. 7/6 to £17. 15/, but this latter quotation lacks confirmation, and seems doubtful, unless there should be some hitch in the negotiations about the renewal of the syndicate to date from July next. But however this may be, for the moment the quotation of Spelter is altogether nominal. The export of Calamine from Spain during the first 11 months of last year was 24,643 tons, against 21,873 tons in 1887 and 25,009 tons in 1886.

**Antimony.**—A cable from England states that Ore has become extremely scarce, causing an advance in Hallett from £45 to £46, while here there was little

Antimony available and a good demand. We quote Hallett 11.25¢ and Cookson 13.25¢.

Everett & Post, dealers in Lead, Spelter and Copper at Chicago and St. Louis, have opened a branch office at 104 John street, New York, where they will be represented by Henry F. Salyards. With offices in these three important centers of the metal trade, their facilities for the transaction of business in the lines in which they operate will be very great, and will doubtless be duly appreciated by their customers.

### New York Metal Exchange.

The following sales are reported:

THURSDAY, January 24.	
10 tons Tin, February.....	21.55¢
10 tons Tin, May.....	21.80¢
10 tons Tin, February.....	21.65¢
66 tons Lead, March.....	3.85¢
25,000 lb Lake Copper, March.....	17.00¢
FRIDAY, January 25.	
10 tons Tin, spot.....	21.50¢
10 tons Tin, April.....	21.70¢
16 tons Lead, January.....	3.80¢
SATURDAY, January 26.	
10 tons Tin, January.....	21.60¢
30 tons Tin, February.....	21.55¢
MONDAY, January 28.	
16 tons Lead, spot.....	3.80¢
25 tons Tin, April.....	21.60¢
TUESDAY, January 29.	
25,000 lb Lake Copper, March.....	16.00¢
WEDNESDAY, January 30.	
25,000 lb Lake Copper, March.....	16.40¢
10 tons Tin, spot.....	21.60¢

### Financial.

Among current events bearing on business relations generally the meeting of railroad presidents in Chicago probably has most weight. After several days' deliberation the conclusions reached are believed to be in all respects favorable touching the general question of railroad management, settling of disputes, paralleling roads, &c., with the special object of preventing ruinous competition. The agreement, it is presumed, will be immediately ratified and put in force, thus consummating the measures proposed at the initial meeting of bankers and presidents held in this city at Pierpont Morgan's. Chairman Judge Cooley, of the Interstate Commerce Commission, says, in so many words, that rate-cutting must stop and the law be obeyed. Referring to the Chicago meeting, he remarked: "The question of maintaining rates resolves itself into a question of maintaining the law. The presidents know this, and any doubt by them as to whether they will pass and live up to an agreement is simply a doubt as to whether they will obey the law. Take the case of the so-called rate war between St. Louis and New York City. \* \* \* Law and right were put aside until the fray was over. Now, the presidents know such actions as these must be stopped. There is no question to the Commission as to how it shall be done. It simply must stop."

The Stock Exchange markets have been generally dull, but strong, with considerable buying on foreign account, and Atchison most conspicuous. Reports from the conference at Chicago were anxiously awaited from day to day, and on Thursday the bearish demonstrations were renewed, and the grangers were attacked, in the expectation that they would suffer because of the decision of Judge Brewer, which sent to the State courts the cases of violation of the Iowa railroad laws. The market opened strong on Saturday, but free selling of Atchison, of Texas Pacific and of Richmond Terminal had an unsettling effect. On Monday stocks opened strong, influenced by better markets in London, indicating that the Boulanger election in Paris had little dis-

turbing effect, but a fall in Atchison, Topeka and Santa Fe in Boston encouraged free selling here. At a later hour news came that the railroad presidents at Chicago had satisfactorily ended their labors. Upon this the market advanced sharply and closed strong. On Tuesday there was an improved movement. At the close news came that the Chicago, Burlington and Northern had made a new demand at the presidents' meeting, and might cause a delay in signing the agreement.

The bond market was buoyant, under a heavy investment demand, and United States bonds are strong at quotations as follows:

U. S. 4½s, 1891, registered.....	109
U. S. 4½s, 1891, coupon.....	109
U. S. 4s, 1907, registered.....	128
U. S. 4s, 1907, coupon.....	128
U. S. currency 6s.....	12

The bureau report of foreign commerce for December shows the exports of merchandise to have been of greater value than during any previous month since December, 1884. Merchandise to the value of \$85,755,481 was exported, in comparison with \$73,229,551 in December, 1887. The December imports of merchandise were valued at \$60,488,104, also the largest record for any December of recent years. At the close of November the excess of merchandise imports over exports for the year had been \$58,700,000, but the December returns reduce the adverse balance to \$33,458,000. This excess of merchandise imports over exports is more than counterbalanced by the excess of our exports of coin and bullion over our imports.

Accounts respecting general trade are variable. Wagon roads in the West and other sections of country have been abominably bad for several weeks past. On the other hand, mild weather has permitted navigation on the Hudson and on the lakes to an extent rarely experienced for many years, and railroads have been free from obstruction. Taking all in all, winter trade has been disappointing, and in several descriptions of merchandise the full prices reasonably expected at this season of the year have not been realized. In breadstuffs there is no life, and holders of flour have been compelled to accept lower prices, despite the curtailment of production. Cables from Europe, too, are dispiriting. The decline in wheat was about 1½¢. For corn shippers manifest little urgency. Stimulated by lower prices exports of provisions from the seaboard last week comprised 8,500,000 pounds of bacon, a gain of 1,000,000 pounds on the corresponding week last year, and freight room is wanted for cotton. In dry goods business is more extended, but conservative, and the tone exceptionally strong. As the week closes, the great tie-up of nearly all the horse-car railways in New York and Brooklyn tends to embarrass local movements in every direction.

The total clearings of 39 cities last week show an increase of 17% over the corresponding week last year. In New York the gain was 18.9%; outside of New York 13.7%. At no point is there a noticeable decrease, while in the Northwest there is almost uniformly a large increase, ranging as high as 56.5% in Denver City. A very fair increase is noted at the principal seaboard cities, including Boston, Baltimore and Philadelphia, in the order named.

The weekly statement of the New York banks was again favorable, if the continued accumulation of funds at this center can be so regarded. The increase of reserve was \$1,985,250, making the present surplus \$20,012,360, against \$23,258,825 at the corresponding time last year, and \$22,298,250 in the fourth week of January, 1887. The gain of only a few weeks past has been considerably in excess of 100 per cent. In loans there was an expansion of

\$3,496,400. Specie increased \$2,881,500, and legal tenders increased \$975,500. Deposits increased \$7,487,000, and circulation decreased \$90,300. Some of the savings banks were desirous of placing money on government security at 2½% for four or five months. Commercial paper was dull. Rates are 4% for 60 to 90 day indorsed bills receivable; 4½ to 5 for four months' acceptances, and 5 to 6 for good single names having from four to six months to run.

The Secretary of the Treasury on Saturday purchased \$521,000 4½% bonds at 109. The total amount of bonds purchased to date under the circular of April 17 is \$108,917,800, of which \$51,396,650 were 4% and \$57,521,150 were 4½%. The total cost of these bonds was \$128,284,759, of which \$66,101,877 was paid for the 4% and \$62,182,882 for the 4½%.

Sterling exchange was firm at \$4.87 @ \$4.89½, and a shipment of \$1,000,000 in gold was made on special order. The Bank of England and the Bank of France reduced their sales of discount from 4 to 3½%. In the present state of the market gold exports from New York as an ordinary exchange transaction yield no profit.

The new Ganesvoort Bank, Fourteenth street, junction Hudson and Ninth avenues, opened for business on Monday.

Henry S. Ives and George H. Stayner, the Cincinnati, Hamilton and Dayton financiers, were lodged in the Ludlow street Jail, being unable to obtain \$250,000 bail each.

The eastbound shipments from Chicago by the trunk lines last week amounted to 56,509 tons, against 61,840 the previous week and 45,047 tons for the corresponding period in 1887.

### British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, January 30, 1889.

The Copper market has been very irregular and unsettled. Up to Saturday last the syndicate agents were bidding £77. 5/ for Chili Bar and G.M.B. prompts and £75 for futures, at which prices very little supply came out. Subsequently they withdrew as buyers of spot stock, but kept standing offers of £75 for futures. Coupled with the decline in price of Rio Tinto shares from 22 to 19½ francs, which was attributed to free selling on orders from Paris, the withdrawal of syndicate support led to a decline to £72. 15/ on prompts, and a considerable amount of G.M.B. was thrown over by outside holders. The decline in Rio Tinto shares led to rumors that the syndicate was on the verge of collapse, and the possibility of that being the case was strengthened by the announcement that negotiations between the Copper Bank and the mining companies were meeting with greater trouble than had been anticipated, more particularly in the instance of the dealings with American companies. To-day the syndicate agents came to the relief of the market and bid up to £87. 10/ for prompts, while not going above £75 on futures; but transactions were reported at as low as £73 for spot and £70 for futures between operators who refused to trade with syndicate agents. Sales of Best Selected were reported at £76 and under. There is no improvement in the demand from consumers, and deliveries continue surprisingly small. Old Copper is offering in larger quantities, and at somewhat lower prices, in the face of announcements



latterly that the supply had been pretty well cleaned up.

Block Tin has depreciated somewhat in value, mainly under the influence of the decline in the price of Copper. The feeling, however, is that the market is in better form, the demand for consumption being fair and the offerings by large operators moderate.

The demand for Tin Plate has been rather slow, owing in part to the refusal of makers to grant concessions on prices. A meeting of makers has been called for the purpose of combining with a view of bringing about a more satisfactory adjustment of railway freight rates. A new works at Langenbeck has been projected.

Welsh Steel makers, who have been most prominent in connection with the proposed Steel Rail combination, have advanced their prices and declare that the syndicate will soon fix a uniform price of £4. 15/ for standard sections. The railway companies manifest unmistakable displeasure at the project and threaten to discontinue purchases. Some extensive contracts are under negotiation at the present time.

Speculation in Pig Iron Warrants has been brisker, and the market has shown more tone, although prices have fluctuated somewhat irregularly under the contest between "bulls" and "bears." The "bear" interest seem determined to resist any advance in view of the large stocks in store. The "bulls" express confidence, claiming that the oversold accounts are heavy and the stocks in makers' hands diminishing. Steamer freights from Glasgow to New York are held higher, the steamship agents now quoting 5/. There have been very few and only slight changes in prices for makers' brands, or on Mid-dlesboro' Pig or Hematites.

Steel of all kinds is held very firmly, and a fairly good business is reported in most lines. Makers ask 2/6 advance on last week's prices for Billets and Wire Rods.

An improved demand for Old Iron Rails is reported, but buyers and sellers are considerably apart on prices.

**Scotch Pig.**—A fair business reported, with prices steady for most brands:

No. 1 Coltness, f.o.b. Glasgow	51/
No. 1 Summerlee, " "	50/6
No. 1 Gartsherrie, " "	48/
No. 1 Langloan, " "	49/6
No. 1 Carnbroe, " "	43/6
No. 1 Shotts, " at Leith	49/
No. 1 Glengarnock, " Ardrossan	47/6
No. 1 Dalmellington, " "	43/
No. 1 Eglinton, " "	42/6

Steamer freights, Glasgow to New York, 4/ @ 5/; Liverpool to New York, 10/.

**Cleveland Pig.**—More activity in this branch and prices very steady. No. 1 Mid-dlesboro', G. M. B., 36/6; No. 3 do., 33/9 @ 34/.

**Bessemer Pig.**—There continues to be a good business and prices remain steady. West Coast brands, mixed numbers, 45/, f.o.b. shipping point.

**Spiegeleisen.**—The market very firm and demand fairly active. English 20 % quoted 80/, f.o.b. N. W. England shipping point.

**Steel Rails.**—The demand less active than last week, but makers firm on prices. Heavy sections quoted at £4, and light sections £4. 2/6 @ £4. 12/6, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—A fair business passing at steady prices. We quote £3. 18/6 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—The demand fairly active and prices firm. Bessemer, 2½ x 2½ inch, £4. 3/9 @ £4. 5/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Only a moderate business and prices nominal. Bessemer, £3. 18/6, f.o.b. at N. W. England shipping point.

**Old Rails.**—There has been a very fair demand. Holders are firm. Tees quoted at £3. 5/ @ £3. 6/, and Double Heads, £3. 8/ @ £3. 10/, c.i.f., New York.

**Scrap Iron.**—The market steady but quiet. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

**Crop Ends.**—Moderate sales and prices unchanged. Bessemer quoted £2. 10/ @ £2. 12/6, f.o.b.

**Tin Plate.**—Very little change, buyers and sellers being apart. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	15/3 @ 15/6
IC Bessemer steel, Coke finish	13/6 @ ...
IC Siemens	13/9 @ ...
IC Coke, B. V. grade	13/3 @ ...
Charcoal Terme, Dean grade	12/ @ 12/5

**Tin.**—A very fair business during the week, and the market showing better tone. Straits quoted at £96. 15/, spot, and £97. 7/6 @ £97. 10/ for three months' futures.

**Manufactured Iron.**—The market firm all through and fairly active. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars	£ s. d. @ 8 2 6
Common	@ 5 15 0
Staff. Bl'k Sheet, singles	7 15 0 @ 7 17 6
Welsh Bars (f.o.b. Wales)	5 0 0 @ 5 2 6

**Copper.**—The market has been irregular and unsettled, but showing more firmness to-day, though quieter. Chili Bars nominal at £77. 10/, spot, and £75 three months' futures. Best Selected, £76.

**Lead.**—Market very slow, and prices rather weak. Quoted at £12. 7/6 for Soft Spanish.

**Spelter.**—The demand light and prices weaker. Quoted at £17. 15/ for ordinary Silesian.

## Foreign Markets.

### EQUIVALENTS.

	Cents.
Franc, Peseta or Lira	10.3
Florin (Netherlands)	10.2
Florin (Austria)	35.9
Vireis (Portugal)	\$1.08
Vireis (Brazil)	54.6
Mark (Germany)	23.8
	Pounds.
Allogram	2.205
Picul	134.

### ARGENTINE REPUBLIC.

**BUENOS AYRES, December 13, 1888.**—*Dynamite.*—A company has been formed in this city for the manufacture of Dynamite, the Fabrica Nacional de Dinamita, with a capital of \$1,000,000, the manager to be Umberto della Casa, and the chairman of the board of managers Augustin Silveyra. Nitric Acid and Chemicals generally will also be made.—*La Tribuna.*

### CHINA.

**HONG KONG, December 4, 1888.**—*Steel.*—Sir R. Hart, the Inspector-General of Customs in China, has fixed the duty on Mild Steel at 0. 1, 2, 5 taels per picul to date from January 1, 1889, the same as on Finished Iron, while hitherto the duty was twice that much. *Argentiferous Lead.*—The two important mines at Jehu, 150 miles north of the Chinese Wall, in Mongolia, have been vigorously taken in hand by orders received from Li Hung Chang, and are now successfully being worked by American mining engineers for Government account upon modern principles.—*Argus.*

### AUSTRALIA.

**SYDNEY, N.S.W., January 9, 1889.**—*Metals.*—The December shipments from Australia to England comprised 1500 tons of Tin, and 9000 tons of Copper Ore.—*Per cable via London.*

### EAST INDIES.

**SINGAPORE, December 17, 1888.**—*Tin.*—Our last report was dated 4th inst., since when only

a moderate business has been done at down to \$37, and the market closes weak with sellers at this price. Buyers offer \$36.75. Supplies have been kept back by rains up-country. Tin has been booked at 30/, via Cape. The Flora P. Stafford sailed. No further feature is reported. Boston—The Antioch and Penobscot are both loading for this port. *Exchange* is steady at 3/2½ for six months' sight credits. There were shipped from the Straits Settlements to the United States during the first 11 months, 55,072 piculs of tin, against same time in 1887, 69,570; in 1886, 66,873; in 1885, 37,058; in 1884, 55,279; and in 1883, 106,231. P. S. per cable January 17, 1889: Tin shipments to the United States during the first fortnight of the month have been from Singapore and Penang 300 tons, against 150 in 1888; to England, 600, against 1400.—*Gilfillan, Wood & Co.*

**PENANG, December 12, 1888.**—*Tin.*—Receipts during the fortnight amounted to 9500 piculs, of which Europeans took 5340 and Chinese 4000. Opening at \$37.55, the market closed after a few fluctuations at \$37.55, after some purchases at \$37.25. *India-Rubber.*—A small lot was paid \$69.50 per picul. *Exchange.*—We quote four months' sight, bank, 3/1½ @ 3/1¼.—*Schmidt, Kusterman & Co.*

**COLOMBO, CEYLON, December 13, 1888.**—*Plumbago.*—A steady, moderate demand has been noticeable at following quotations: Large Lumps, ½ ton in rupees, 145 @ 170; Ordinary ditto, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. Plumbago shipments to England, 15,434 tons; to Hamburg, 851; to Antwerp, 1027; to India, 21; to Australia, 88, and to the United States, 22,209; together 39,630, against 51,026 in 1887; 55,066 in 1886, and 34,550 in 1885. *Exchange.*—Six months' sight, 1/4½.—*Volkart Brothers, through their agent, Mr. John W. Greene, 82 Wall street, New York.*

**MANILA, January 21, 1889.**—*Hemp.*—There are buyers at \$15.15-16 per picul against same date 1888, \$9½, equaling ½ ton cost and freight \$54. 15/ against £33. 5/; clearances for the United States since last cable amount to 4000 tons, against 7000 in 1888; since January 1, to 24,000, against 13,000; loading for do., 28,000, against 7000; cleared for England since January 1, 11,000, against 15,000; loading for do., 3000, against none; cleared for all other ports, 2000, against 3000; receipts at all ports since last cable, 10,000, against 13,000; do. since January 1, 29,000, against 26,000 in 1888 and 27,000 in 1887. *Freight.*—\$7.50 against \$5.50. *Exchange.*—3/8¼, against 3/8.—*Ker & Co., per cable direct, to their agent, Mr. Charles Nordhaus, 89 Water street, New York.*

### SWEDEN.

**STOCKHOLM, January 17, 1889.**—*Machine Made Nails.*—Swedish makers have formed a syndicate for the control of output and prices, and a sales office is opened in this city under the management of the firm of L. L. Liberg. *Iron Ore.*—The Government has resolved not to acquire the Lulea-Ofoten Railroad, taking umbrage at the demand of the latter that no export duty be imposed on its Iron Ore in the future.—*Dagbladet.*

### GERMANY.

**HAMBURG, January 19, 1889.**—*Iron.*—All sorts of Pig Iron have been in active request, and the home and export demand for Spiegel is such that the price has advanced uninterruptedly, 10 @ 12½ now being worth 59 marks per ton. Forge Pig is also tending upward, and makers decline naming a figure for the second quarter. The Rhenish-Westphalian syndicate raised the price on the spot 1 mark, so that Thomas is now held at 46 and German Bessemer at 55. Foundry is also better, the range being 54 @ 61; Luxembourg, 35.70 @ 41; Finished Iron has followed suit and improved 2½ marks. A good spring trade seems to be in prospect throughout the Iron and Steel branches. The American demand for Wire Rods has also revived; the same may be quoted 106 @ 107 marks; Steel Rails, 120 @ 125; ditto for mines, 110 @ 115.—*Borsenhalle.*

### BELGIUM.

**BRUSSELS, January 19, 1889.**—*Iron.*—The Belgian Iron market generally remains in good position. Although the orders dropping in might be larger, they nevertheless sum up a decent aggregate—sufficient to keep all things going. Orders for Steel Rails have been on the increase. The number of blast furnaces in operation is the same as it was during December. Out of 50 in Belgium 19 remain blown out. December production has been large. Pig, 54,870 tons; Foundry ditto, 4185; for Steel making, 16,585 tons—together 75,640 tons. Pig Iron consumption in November was 79,354 tons. During the first eleven months of 1888 we exported 62,749 tons of Steel Rails, against 65,323 in 1887.—*Moniteur des Intérêts Matériels.*

Wages have been reduced by many boot and shoe makers in New England during the last six months.

## Hardware.

There is an evident improvement in business, of which there is a fair amount doing in a quiet way. Travelers' reports indicate a good condition of things throughout the country generally, and it is expected that a good business will be done in the near future. Prices are without material change, and while concessions are being made on some lines, in others there is an improved tone. The general situation is regarded as promising well for the season's business, the principal complaint on the part of manufacturers being the very narrow margin of profit on most lines.

### Cut Nails.

The official report of W. E. S. Baker, Philadelphia, Secretary of the Atlantic States Nail Association, shows the following figures for the monthly production of Nails in the 27 mills of the association, whose aggregate number of machines is 1830:

Months.	1887. Kegs.	1888. Kegs.
January.....	268,748	179,411
February.....	271,290	193,367
March.....	292,145	233,216
April.....	221,139	199,151
May.....	147,463	219,888
June.....	201,631	216,410
July.....	151,497	150,300
August.....	211,646	208,585
September.....	244,750	206,478
October.....	247,170	248,743
November.....	239,284	195,539
December.....	222,820	174,382

Totals..... 2,609,502 2,405,470

These figures compare as follows with previous years:

	Kegs.	1887. Kegs.	1888. Kegs.
1884.....	2,253,917	1887.....	2,609,502
1885.....	2,743,318	1888.....	2,405,470
1886.....	2,863,268		

The stocks were for a series of years:

### Stocks of Cut Nails.

January 1, 1885.....	245,550 kegs.
January 1, 1886.....	306,556 kegs.
January 1, 1887.....	241,864 kegs.
January 1, 1888.....	330,986 kegs.
January 1, 1889.....	389,834 kegs.

The report of the product of the Atlantic States Association, given above, does not include several small works with an estimated product of 68,000 kegs, making the total output 2,473,470 kegs. Last year, with allowance for mills not reporting, the total was made 2,727,734 kegs for the Eastern mills.

Business is moderately active in the New York market, with quotations unchanged at \$1.80 @ \$1.90 for carload lots and \$1.90 @ \$1.95 for small lots from store.

The regular monthly meeting of the Western Cut Nail Manufacturers' Association is being held at Wheeling, W. Va., to-day.

### Wire Nails.

The market remains in substantially the same condition as at our last report, with a further improvement, as the extreme prices recently prevailing have been quite generally withdrawn. A large amount of orders has been placed, and the mills are consequently not as solicitous of making sales. Quotations remain as before on a basis of about \$2.30 at mill, with the usual advances for small lots from store.

### Barb Wire.

The New York market presents no new features, prices being pretty well maintained, but to a large extent nominal, as transactions are limited.

Advices from the West make it questionable as to whether the recent understanding reached by the St. Louis manufacturers, as referred to in our last issue, will result in securing regularity in prices,

as it is reported that one of the parties has practically withdrawn from the arrangement.

An important fact has just been made public in connection with the pending and apparently interminable litigation over the Barb Wire patents. Some time since, in a suit with the Washburn & Moen Mfg. Company, the Beat-em-all Barb Wire Company, of Cedar Falls, Iowa, were victorious, establishing by testimony the use of Barbs on Wire used for fencing prior to the date of the patents. It now transpires that one of the witnesses, whose testimony largely aided in establishing prior use, has signed an affidavit that his statements were incorrect. This affidavit is in the possession of the Washburn & Moen Mfg. Company's attorneys. Several members of the family of another witness have made affidavits that his statements also were incorrect, though he has refused to make such an affidavit. Sensational as these statements are, we are assured of their truth by those in a position to know all the facts. An aggressive movement on the part of the owners of the patents is looked for at an early day, as it is not likely that they will lose much time in following up the opportunity which these disclosures give them to have the verdict against them set aside. When that is done they will vigorously prosecute their suits for infringement.

### Miscellaneous Prices.

It was decided by the manufacturers of Picks and Mattocks, to whose conferences with a view to advance in price we referred in our last issue, to hold their meeting at an earlier day than was first intended, in order that they might effect the change in prices without too great an accumulation of orders. The meeting was accordingly held last week, instead of this week, as originally intended, and prompt action was taken, forming a strong combination and advancing prices from 15 to 25 per cent. on the different lines of Picks and Mattocks. It is understood also that the new prices will as far as practicable, apply to orders received since January 1, so that the manufacturers may be unembarrassed by the presence on their books of orders at the old figures, which would tend to give a good deal of irregularity to the market. As it is, it is thought that less than the usual quantity of orders were placed at old prices in anticipation of the advance. The wisdom of the manufacturers in this action is generally conceded by the trade.

The combination on Iron Rivets does not on the surface develop striking irregularities, but concessions beyond the regular prices are made by some of the manufacturers, and there are other indications of irregularities.

Another advance has been made in the prices of Rope, the manufacturers' quotations now being subject to a discount of 1½ % for cash in 10 days:

	Per pound
Manila, ½ inch and larger.....	15¼¢
Manila, ¾ inch.....	15¾¢
Manila, 1 and 5-16 inch.....	16¼¢
Manila, Tarred Rope.....	14¾¢
Manila, Hay Rope.....	15¼¢
Sisal, ½ inch and larger.....	13¼¢
Sisal, ¾ inch.....	13¾¢
Sisal, 1 and 5-16 inch.....	14¼¢
Sisal, Hay Rope.....	13¼¢
Sisal, Tarred Rope.....	12¾¢
Sisal, Medium Lath Yarn.....	12¼¢

Both Cast and Wrought Butts are in an unsatisfactory condition and prices are irregular and low. In Wrought Butts there is an animated competition between two of the manufacturers, the other manufacturers not being so active participants.

The Screw market is in a very satisfactory condition and prices are well adhered to by the manufacturers. They report that the indications are that the stocks

purchased by the jobbers at the old prices are pretty well broken, as most of them are purchasing goods at the new prices. That the old stocks have lasted to the present time is a striking evidence of the great quantity of Screws that was purchased previous to the advances.

The Skein manufacturers, at a meeting held in Chicago January 3, 1889, adopted a revised standard list, as follows:

### Standard Steel Skein List with Either Nuts or Linch Pins.

To fit size.	Per set.	To fit size.	Per set.
2¼ x 7.....	\$5.60	3¼ x 11.....	\$8.50
2½ x 7½.....	5.70	3½ x 12.....	9.00
2½ x 8.....	5.80	3½ x 11.....	10.00
2½ x 8.....	6.10	3½ x 12.....	10.00
2½ x 8½.....	6.20	4 x 12.....	12.00
2½ x 9.....	6.30	4½ x 12.....	13.00
3 x 9.....	6.50	4½ x 12.....	17.00
3 x 10.....	6.70	4½ x 13.....	18.00
3½ x 9.....	7.40	5 x 14.....	23.00
3½ x 10.....	7.50	5½ x 14.....	25.00
3½ x 11.....	7.60	6 x 15.....	27.00
3½ x 10.....	8.30	6½ x 18.....	30.00
3½ x 10½.....	8.40		

From the above list the Columbus Mfg. Company, Columbus, Ohio, announce the following discounts:

Rocky Mountain brand, 40 per cent.  
Columbus brand, 40 and 10 per cent.

The following is their price list of Hub Boxes, seamless and interchangeable, which is subject to a discount of 50 per cent.:

To fit size.	Per set.	To fit size.	Per set.
2¼ x 7.....	\$0.66	3¼ x 11.....	\$2.13
2½ x 7½.....	.75	3½ x 12.....	2.25
2½ x 8.....	.84	3½ x 11.....	2.37
2½ x 8.....	.90	3½ x 12.....	2.40
2½ x 8½.....	1.05	4 x 12.....	2.49
2½ x 9.....	1.20	4½ x 12.....	2.70
3 x 9.....	1.32	4½ x 12.....	3.66
3 x 10.....	1.50	4½ x 13.....	3.93
3½ x 9.....	1.63	5 x 14.....	4.11
3½ x 10.....	1.74	5½ x 14.....	5.46
3½ x 11.....	1.83	6 x 15.....	6.60
3½ x 10.....	1.92	6½ x 18.....	10.20
3½ x 10½.....	2.01		

The following are revised quotations of the Boston and Lockport Block Company, Lockport, N. Y., on their line of Faucets:

	Discount.
West's Lock, Open and Shut Key.....	50 %
Star, Metal Plug.....	40 %
Lockport, Metal Plug.....	60 %

They call attention to the fact that their lists are lower than those of some other makers, new or revised lists having been also recently adopted for some of the goods. They have discontinued making their Anchor Lock Faucet.

The Freeman Wire Company, St. Louis, Mo., are quoting the following prices on their Wire, Barbed Wire, Staples, &c.

2 or 4 Point Painted Barbed Wire, in Cattle or Hog.....	\$2.90
2 or 4 Point Galvanized Barbed Wire, in Cattle or Hog.....	3.50

In less than car lots, the price is \$3 for Painted, \$3.60 for Galvanized.

No. 9 Annealed Smooth Wire.....	\$2.40
Nos. 10 and 11 Annealed Smooth Wire.....	2.50
No. 12 Annealed Smooth Wire.....	2.60
With 60 cents advance for Galvanized.	
No. 14 Annealed.....	2.90
No. 15 Annealed.....	3.05
No. 16 Annealed.....	3.20
With 75 cents advance for Galvanized.	
Annealed or Plain Staples.....	2.75
Galvanized Staples.....	3.50

The Superior Saw Sets, manufactured by the American Tool Company, Canton, Ohio, are listed at \$15 per dozen, and are subject to a discount of 50 per cent.

### Accuracy in Tape Measures.

Referring to a paragraph which appeared in a recent issue of this paper in regard to inaccuracies in a well-known line of English Tape Measures, we have the following communication from George M. Eddy & Co., leading American manufacturers of these goods, in which it will be seen that they maintain the correctness



of the position of their English competitor, insisting that minute accuracy cannot be expected in woven Tapes under the many conditions in which they are used, and the different influences of moisture, temperature, &c., to which they are subjected. As giving the judgment of an expert in this line our correspondent's views are entitled to weight and the trade will be enabled to judge intelligently of the degree of accuracy which is to be expected from common Tapes, looking for exactness in measure to the Steel and other high-priced Tapes in which this is secured:

Our attention has been called to a paragraph in *The Iron Age* of the 10th inst., page 65, on the subject of the inaccuracy of some English Measuring Tapes. The English manufacturer was entirely correct in his remarks. Although the Tapes are printed from a correct standard it is impossible to expect that they will remain so under all conditions. The variations of the weather affect all woven Tapes. If printed in damp weather they will shrink more than when it is dry. Again, if used in damp or wet weather they will stretch and contract again when dry. If used for some purpose, as, for instance, measuring green timber or wood, then will shrink remarkably as they absorb the tannic acid in the wood. Have found them to shrink as much as 8 inches in 50 feet, after being used sometimes for that purpose. No woven Tapes can be relied on for standard measure. The only standard of considerable length is the Steel Tape under all conditions. The only variations are the differences of temperature, which are uniform and well known to engineers and others accustomed to use them. The steel Tapes are graduated to a standard of 62 degrees, and the variations are 0.08 inch in 100 feet for every 10 degrees F. above or below that standard. They are standard measures and will remain so in use. If broken can be mended at small expense. A spring balance for uniform strain with level attachment can be used when great exactness is required. They have become indispensable for a great variety of purposes and the demand for them is constantly increasing. Our experience of over 40 years in this business enables us to speak with confidence on the subject.

#### Items.

The Chicago Spring Butt Company have just issued their catalogue for 1889, in which they continue their usual yearly improvements in their line of specialties and their habitual addition of new goods. They have taken a step in advance in giving list prices for Japanned, Common Bronzed, Nickel-Plated Springs and Tips, Bronze-Plated Springs and Tips, Ground Opal Bronzed, Nickel-Plated, Bronze-Plated, Iron Oxidized Antique, Bower-Barff, Iron Oxidized Silver, Bronze Metal, Polished Brass, Bronze Metal Antique, and Bronze Metal Oxidized Silver. These are all subject to a regular discount, thus avoiding the confusion and perplexity experienced when some uncertain net amount has to be added for odd finishes to the discounted amount of an ordinary list. This extra amount for finishes is also usually obtained by writing specially for it, which is another troublesome matter obviated by the company's catalogue. Their new Double-Acting Door Check Latch is decidedly novel, and their new Screen Door Hold-Back Hinge has the Spring placed behind the Hinge, so that it hardly appears to be a Spring Hinge. The telegraph code of their leading goods will undoubtedly prove convenient, as a variety of goods can be ordered in a ten-word telegram. As their Fire-engine House Hinge is not kept in stock by the smaller trade, a full-sized cut of it is pasted in the catalogue, which will be found a useful aid in selling the hinge without having to keep a sample of it.

Rockford Cutlery Company, Keokuk, Iowa, formerly of Rockford, Ill., at the election held January 15th, elected the following officers: C. E. Phillips, president, C. J. Stegmaier, vice-president; W. S. Phillips, secretary and treasurer. C. H. C. Burlingame, the retiring manager, held that position for nearly five years, and is

succeeded in that capacity by W. S. Phillips. The company have made some alterations in their plant, and inform us they are in a position to fill all orders in a satisfactory manner.

M. McKercher & Co., 106 and 108 Wabash avenue, Chicago, have succeeded the Miller Mfg. Company in the manufacture and sale of Curd's Patent Brace Splice. They will also represent a full line of the Enterprise Mfg. Company's Rosettes and Harness Specialties. The new firm is composed of three young and enterprising men of ability and business experience.

The Vaughan & Bushnell Mfg. Company, 89 to 95 South Clinton street, Chicago, have issued a revised price list on their Special Wrought Goods, comprising Nail Grips, Nail Claws, Floor Hooks, Grappling Hooks, Sash Weight Rings, Eye Bolts, Swing Bolts and Rings, Well Wheel Hooks, Heavy Hasps, Ice Tongs, Hitching Rings, Leader Hooks, Post-hole Augers, &c. It is a handsomely illustrated and finely printed pamphlet of 16 pages.

The annual meeting of the stockholders of the Wheeling Hinge Company, of Wheeling, W. Va., was held on Tuesday, the 22d inst., at which the old Board of Directors was re-elected.

The Grand Rapids Refrigerator Company, Grand Rapids, Mich., are preparing a new art catalogue, which is intended for general distribution. In it they give a very interesting series of pictorial sketches. It is not simply an illustration of different patterns of their Refrigerators, though these are given, but there are a number of sketches artistically designed of subjects connected with their Refrigerators, the formation, gathering and making of ice, which are effectively printed in color, and embody in the legends connected with them something of a love story. The pamphlet is intended for distribution by the trade to their customers, and will doubtless serve its purpose well, as it is so gotten up as to be of real interest, while it calls attention on its alternate pages to the Leonard Refrigerators. The back page in the copy before us is left blank and is intended to receive the card of the merchant. It is accompanied by a circular in which the company request the merchant to whom it is sent to indicate the number of copies which he can distribute, which will be furnished free of charge. As an instance of advertising enterprise this departure on the part of the company is deserving of commendation, and will doubtless result in bringing their Refrigerators in a very attractive manner to the attention of a largely increased number of purchasers of such goods.

The Chattanooga Tool Company, Chattanooga, Tenn., issue a neat catalogue describing their line of Rakes, Drain Cleaners, Mallets and Handled and Eye Hoes, of which illustrations and list prices are given. They allude to the purchase, to which we have already referred, of the entire equipment, machinery, tools, patterns, dies, &c., together with the good-will, of the Hoe manufactory of M. Bare, Hamilton, Ohio, and the removal to Chattanooga of the skilled labor that operated it, as giving them, with the enlargement of their factory, greatly increased facilities for manufacturing their old line of goods, together with the full line of Eye Hoes made by Mr. Bare.

Paine, Diehl & Co., Philadelphia, Pa., are calling attention to their Keystone Culinary Whips and Mixers, a line which they are preparing to put on the market in large quantities.

The late firm of N. T. Bushnell & Co., New Haven, Conn., was dissolved January 1 by the retirement of Edward A.

Todd. The business will be continued under the same name by N. T. Bushnell, Arthur Griggs and William H. Burchell, who will settle up the business of the old firm.

The Avery Stamping Company, Cleveland, Ohio, issue a convenient pamphlet relating to their Patent Seamless Steel Elevator Bucket, of which a full description is given.

Among the special notices on page 47 will be observed one signed "A. K. J.," in which a desirable stock of Hardware, valued at \$9000, together with a Hardware business desirably located in the Indiana gas region, is offered for sale. Those desiring to engage in such an enterprise may obtain further particulars by addressing the advertiser.

Barrows-Savery Company, Philadelphia, Pa., in addition to their regular line of Hollow-Ware, are now making Enameled Maslin Kettles with patent lip.

Simmons Hardware Company, St. Louis, Mo., have issued their annual catalogue for the present year, in which they illustrate Children's Carriages, Wagons, Velocipedes, &c., Bicycles, Wheelbarrows, Refrigerators, Churns, the Perfection Vapor Stoves and other specialties. The Perfection Oven is also described, with illustrations showing its construction.

The Iowa Farming Tool Company, Fort Madison, Iowa, have issued their illustrated catalogue for the present season. It is characterized by the same elegant typographical features which have been found in their former issues, and shows their large line of Steel and Wood Goods in an attractive manner.

Ausable Horse Nail Company, 4 Warren street, New York, have appointed Duncan K. Major their Western representative.

Henry Hopkins & Co., publishers of Hopkins' "Handy Notes and Queries," 99 Reade street, New York, issue a small pamphlet in which many Hardware houses allude to its interest and utility.

The business heretofore conducted by A. J. Harwi, Atchison, Kan., has been incorporated, and will hereafter be carried on by the A. J. Harwi Hardware Company. The officers are as follows: A. J. Harwi, president; W. P. Mallery, secretary, and E. C. Harwi, treasurer. This is the commencement of the 15th year of the business, and the company will have the best wishes of the trade for their success.

The trade will observe the advertisement on page 46, in which Haydock & Bissell, No. 12 Murray street, New York, call attention to their sale of Hardware, House-Furnishing Goods, Edge Tools, Shovels and Spades, &c., on the 5th prox. Its importance will evidently justify the attention of the trade.

The Russia Cement Company, Gloucester, Mass., manufacturers of Le Page's Liquid Glue, announce that they have severed their connection with the firm of Tower & Lyon, and have secured the services of Maltby, Henley & Co., 20 Warren street, New York, by whom these goods will be supplied to wholesale Hardware dealers at manufacturers' prices. They also state that they have just completed an entirely new plant for the manufacture of Le Page's Glues, and are now able to fill all orders without delay. These works, which are referred to as the largest of the kind in the world, are capable, we are advised, of consuming 35 tons of raw material per day, the process employed having been recently improved under patents controlled by the company. The company have just issued a very neat display stand for the exhibition of their goods, which will doubtless be appreciated by the trade.

Rector & Wilhelmy Company, Omaha, Neb., are sending out a very neat and convenient pocket memorandum book. On the inside covers and the pages facing them they call attention to their specialties, including Jefferson Steel Nails, Austin and Crack Shot Powder, Cartridges, Wads, &c., Fairbanks' Scales, Western Washers, Indurated Fiber Ware, Peerless Handles, Jackson Steel Goods, Lane's Hangers and others. The body of the book is without any printed matter, rendering it admirably adapted to its purpose. They send it out with a courteous and business-like circular.

The Eco Magneto Clock Company, 105-111 Summer street, Boston, Mass., issue a convenient pamphlet describing their Eco Magneto Watchmen's Clock. This Clock is for the purpose of registering visits of the watchman to each station independent of all other stations, similarly to other electric Clocks, but contains the novel feature of being without a battery, as the electricity is generated from a small magneto at each station, similar in principle to a telephone call except that only one-fourth of a turn is necessary to make a record. This method of operating a watchman's clock is referred to as possessing important advantages from the fact that the record can only be made from a station, and that no other means of interfering with the circuit exists by which the record can be falsely made. A full description is given, with testimonials from parties who are using it.

The Penn Lock Works, Philadelphia, formerly located at No. 142 North Fourth street, have moved to No. 146 same street. Their facilities are now increased for the manufacture of Locks, Key Blanks, Locksmiths' supplies, Ice Creepers, &c.

The Nason Mfg. Company, 71 Beekman street, New York, prepared a convenient pocket book for containing papers and memoranda, which was sent out with the compliments of the season, and called attention incidentally to the fact that they are dealers in Pipes, Valves, Fittings, Boilers, Steam Engines, &c.

### Pushing German Trade.

The English manufacturers are keeping a watchful eye upon their German competitors and note with natural jealousy any advances made by them in foreign markets. The enterprise shown by the German manufacturers of Iron and Hardware goods is acknowledged by their more conservative neighbors, and there is evidence that the fact that in several lines the Germans have stolen a march on their competitors and are using in all departments much skill and vigor in the extension of their trade is having its effect upon the English makers, and stimulating them to new efforts to hold the markets which they now occupy. The following editorial from the London *Iron-monger* refers to recent efforts made by the Germans in the way of gathering information in foreign markets with the intention doubtless of utilizing it for the extension of their trade:

The Germans are certainly to be credited with almost sleepless energy in their efforts to develop their foreign trade. Many of their methods of procedure have been already touched upon in these columns, but the latest of their efforts comes before us from Constantinople. At that place the German Consul-General has issued a circular and a series of tabulated sheets, with blank spaces to be filled in, in order to ascertain the amount of business done in German goods by the different merchants, &c., to whom the circular is addressed. The circular is in French, while the list of goods is in German and French, printed in parallel columns. The list is most exhaustive, and comprises almost every kind of merchandise, including Iron and Steel of all kinds, Hardware of every variety, Machinery and Machine Tools, Cutlery, Nails, Agricultural

Implements, Locks, Oils and Colors, Needles, Lamps, Copper, Zinc, &c., work, Guns and Ammunition, &c. The circular and list have been sent out in a thoroughly systematic manner, and as the information asked for is certainly of the most confidential character, the Consul-General promises *la plus grande discrétion* shall be observed in dealing with it. The precise object of the German Government in thus obtaining the information direct from the traders, instead of from the Turkish authorities, does not appear, but as it is pretty certain to be used for the purpose of pushing German trade with Turkey, we in this country should lose no time in looking after our interests in that market.

### Business Methods.

Hirsch & Co., retail Hardware merchants, at 327 South Clark street, Chicago, have introduced a novel feature in connection with their business. They have established a free carpenters' employment bureau, and will keep a list of carpenters desiring work, for the convenience of builders and contractors. The scheme has been tried for a sufficient time to prove its desirability. The carpenters who procure work through the friendly offices of the firm are not likely to forget the favor when they are in need of tools. A further stroke of enterprise is the publication of a monthly paper for free distribution called *The Carpenters' Journal*. It is devoted to illustrations and descriptions of new and popular tools. Price lists accompany the descriptions. Hirsch & Co. are live Hardware merchants and have original ideas about the arrangement of their hardware store which will be described in these columns in a future issue.

The McFadden Company, 1025 Market street, Philadelphia, Pa., use a form which is not generally adopted in making quotations from their catalogue. It is of a size somewhat smaller than the pages of their catalogue, so that their patrons may paste it inside their book if they so desire. Under the heading of the firm name, address, &c., and the address of their correspondent, the form is in this wise:

We will be pleased to receive your orders at the following discounts from standard lists, as given in our catalogue. Prices subject to market changes without notice. Terms....

The blank which follows has one column for the catalogue page, a wide space for the description of the goods, and another column for the discount.

Randolph & Clowes, Waterbury, Conn., have adopted a novel method of calling attention to their Seamless Drawn Brass and Copper Tubing. It has the appearance of a legal document, the form being boldly printed in type and the blanks filled in *in fac-simile* of handwriting. The substance of the document is as follows, the filling of the blanks being indicated by italics:

### UNITED STATES OF AMERICA.

To all to whom these presents shall come, Greeting:

Know ye that Randolph & Clowes, of the City of Waterbury, County of New Haven, State of Connecticut, have supplied for the use of the United States Government sundry and divers Seamless Drawn Tubes of Brass and Copper, and have delivered the same with commendable and extraordinary promptness, and of a quality equal to, if not superior to, any heretofore received by the Departments.

And, further, the said Randolph & Clowes have entered into a contract with *The Calumet and Hecla Copper Mining Company*, of Lake Superior, State of Michigan, for a full supply of pure Copper, &c., which well-approved brand only will hereafter be used by said Randolph & Clowes to the exclusion of all and every kind and sort whatsoever.

Wherefore, full confidence and reliance may hereafter be placed on the perfection of workmanship and excellent quality of material in all goods, wares and merchandise supplied by

Randolph & Clowes to all citizens and customers whosoever they may befond.

Now therefore, it is strongly urged and recommended that all good citizens of the United States wanting Seamless Drawn Brass and Copper Tubing do order the same forthwith from the said Randolph & Clowes, of the City of Waterbury, County of New Haven, in the State of Connecticut, in the United States of America.

By order of

T. U. BING,

Officer in Charge.

W. H. H. Bonebrake, who is now with Gittings & Porter, Little Rock, Ark., writes us with reference to the convenience of the remittance form of the Towers Hardware Company, Birmingham, Ala., of which we gave a description in a recent issue. Its convenience in checking up is especially referred to.

### Prices in England.

A recent issue of the *Iron and Coal Trade Review*, London, contains some prices of Hardware and heavy Iron goods produced in Birmingham and the Midlands district, from which we make some extracts, which will be of interest to some of our readers not familiar with the trade in England, as showing not only the prices ruling, but more especially as illustrating some differences in the way in which goods are designated, listed, &c.:

ANVILS.—Common, 15/3 per cwt.; Best Anvils, not warranted, 18/9 per cwt.; Best Warranted Anvils (bicks tied in 1 to 5 cwt.), 19/9 per cwt.

AXES.—Ship Carpenters', 0/3 to 0/7 per pound; Kent and House Carpenters' ditto, 0/4 to 0/8; ditto, Steel Polished, 0/4½ to 0/8½; Felling Axes, 0/4 to 0/6½; Bright and Blued, Solid Steel, 0/6½ to 0/7½; American Felling or Wedge Axes, Steel Polished, 0/5 to 0/9½ per pound.

AXLE PULLEYS.—Iron, 7/9 to 26/1, 1¼-inch; Brass Face ditto, 22/6 to 46/1, 1¼-inch.

BOLTS AND NUTS.—Black, ½ and 5-16 to 2-inch and under, 2/9 and 3/3; ¾-inch, 4/5; 7-16-inch, 5/8 per gross. ½ and 9-16-inch, 19/; ¾ and 1-10-inch, 16/; ¾ to 1¼-inch, 15/ per cwt. 2½ to 3¼-inch, 3/3; 1-16-inch, 5/; ¾-inch, 5/9; 7-16-inch, 7/1 per gross. ½ and 9-16 inch, 17/; ¾ and 1-16 inch, 15/; ¾ to 1¼ inch, 14/3 per cwt. Square Heads, Round Necks, Square Nuts, 2½ and 3-inch x ¼, 4/; 5-16-inch, 4/7; ¾-inch, 6/; 7-16-inch, 7/4 per gross. ½-inch, 20/; ¾-inch, 17/6; ¾-inch, 16/6 per cwt.

CHAIN.—Machine-made, Wire, single link, "Iron," 65 p. c.; double link ditto, 62½ p. c.; Machine made Wire Chain, single link, "brass," 55 p. c.; registered ditto, 50 p. c.; close link brass Chain, 52½ p. c.; oval link brass Chain, 55 p. c.; brass clock Chain, 52½ p. c.; short link tested (rigging) Chain, 3-16-inch, 16/3; ¼, 13/9; 5-16, 12/; ¾, 11/6; 7-16, 10/9; ¾, 10/3; ¾, 9/9; ¾, 9/6; 1-inch, 9/3 per cwt.; Well Chain, twisted or straight link, ¾-inch, 20/6; 3-16, 16/0; ¼, 14/6; 5-16, 12/ per cwt. delivered; jappaned Pillar Chains, 1 yard, 16 x 6, 5/9 to 6/9 per dozen; jappaned Manger Chains, 1½ yard, 16 x 6, 6/9 to 8/; jappaned Rack, 1 yard, 18 x 6, 5/6 to 6/3; jappaned Dog, 1½ yard, 12 x 7, 5/9 to 6/9; 2 yards, 14 x 6, 10/9 to 11/9; Cowties, 6/9 to 8/9; open ring, 6/9 to 8/9; close ring, 5/9 to 6/9 per dozen; jappaned Watering Chains, 14 x 6, 4/3 to 5/3; timed ditto, 4/9 to 5/9; Bullock Chains, ¾-inch hook at each end, 13/6 to 14/3.

HORSESHOES.—Fullered fore, 14/6 to 16/6; fullered hind, 16/6 to 18/6; stamped fore, 15/ to 17/; hind, 16/ to 18/.

NAILS.—Patent forged nails, iron or steel, strong rose (flat points), 1-inch, 4 lb., 46/8, &c.; fine rose (flat points), 1-inch, 2½ lb., 73/; 1½-inch, 3½ lb., 58/6; 1½-inch, 4 lb., 55/; 1½-inch, 5 lb., 48/6; 2-inch, 7 lb., 43/6; 2½-inch, 8 lb., 41/6; 2½-inch, 10 lb., 34/6; 2½-inch, 14 lb., 34/; 3-inch, 17 lb., 32/ per cwt.; coopers' rose (sharp points), 2½-inch, 7 lb., per cwt., 2-ton lots, 37/6; 1½-inch, 8 lb., 36/3; 2-inch, 10 lb., 33/9; 2½-inch, 12 lb., 32/; 2½-inch, 17 lb., 29/6; 2½-inch, 10 lb., 28/6; 3-inch, 23 lb., 29/ per m.; fine clasp (sharp points), 1½-inch, 4 lb., 58/4; 1½-inch, 5 lb., 52/3; 2-inch, 7 lb., 45/6; 3½-inch, 8 lb., 42/9; 2½-inch, 10 lb., 38/9; 3-inch, 14 lb., 35/ per cwt.; best Canada (sharp pointed), 1½-inch, 4 lb., per m., 56/; 2-inch, 7 lb., 44/; 2½-inch, 8 lb., 42/9; 2½-inch, 12½ lb., 36/3; 3-inch, 14 lb., 35/ per cwt.; Pound Nails, 6 dy, 2½-inch, 28/6; 8 dy, 2½-inch, 27/; 10 dy, 3½-inch, 23/6; 20 dy, 4-inch, 23/ per cwt.; discounts, 57½ p. c. off iron, 62½ p. c. off Steel; Nails, Cast Lath, 10/ per cwt.; Wall Nails, Cast, 9/6 per cwt.; Wrought, Best Counter-sunk, Clout and Cone Head Nails, 1-inch, 27/9;



1½-inch, 23/; 2-inch, 21; 2½-inch, 17/6 per cwt. Best Fine Swedish Iron, Countersunk Horse Nails, Stamped, 6 lb. per m., 46/ per cwt.; 8 lb., per m., 43/; 10 lb., per m., 40/ per cwt.; 12 lb., per m., 38/6 per cwt., or subject to 55 p.c. Derby list; Wrought Rose and Deck Head Spikes, 4-inch, 11/9; 5-inch, 10/3; 6-inch, 9/6; 7-inch, 9/3 per cwt.; Galvanized, 5/6 per cwt. extra; Wrought Rose Nails, flat or sharp points, 2-inch, 18/3; 2½, 17/3; 2½, 16; 3, 14/6 per cwt. Wrought Nails, May, 1886, list, 42½ to 47½ p. c.; Wrought Bromsgrove, Nails, March, 1878, list, 30 to 35 p. c.; Composition Sheathing and Slatting Nails, ¾-inch, 0/8½ per lb.; Copper Slatting Nails, cut, 1 to 1½ inch and upwards, 0/11½ to 1/ per lb.

PICKS.—Iron and Steel Excavators, 0/2¼ to 0/3½ per lb.

SHOVELS.—Common Iron, round back dust, 4-inch to 8-inch, 1/9 to 6/ per doz., less 25 p.c.; socket handles, 1/ per doz. extra; Bell mouth Shovels, 7-inch to 10-inch, 2/ to 4/ per doz., net; ditto japanned, with wood handles, 3/4 to 5/6 per doz., net; Shovels, all Steel, crutch handles, No. 2, 14/; No. 3, 15/; No. 4, 16/ per doz.; No. 5, 17/ per doz.; eye handles, 1/ per doz. extra; riveted ditto, 2/ per doz. extra; Spades and Shovels, common, 60 p.c.; second, 55 p.c.; best, 50 p.c. to 40 p.c. discount off the list.

STEVES.—Brass and Iron, 50 p.c. off list.

STEEL TOYS.—25 to 45 p.c. off the list.

TACKS.—Fine cut, in 1 and 7 lb. parcels, ¼-inch, 30/; ¾-inch, 22/; ½-inch, 17/; ¾-inch, 16/; ¾-inch, 15/; ¾-inch, 14/; 1-inch, 13/ per cwt.; tinned, 7/ per cwt. extra; in ½-cwt. bags, 1/ per cwt. less.

VISES.—Best warranted "black" staple, solid box, 22/6 per cwt.; best warranted "bright" staple, solid box Vises, 26/ to 27/ per cwt.; Vise Boxes and Pins, 55/ per cwt.

WASHERS.—Light Iron, 77½ p.c.; heavy Washers, 13 to 6 W. G., 11/3 per cwt.

WIRE.—Best best Iron or Steel, bright, No. 0 to 6, 7/3; 7, 7/6; 8, 7/9; 9, 8/; 10, 8/3; 11, 8/9; 12, 9/; 13, 9/6; 14, 10/; 15, 10/6; 16, 11/; 17, 11/6; 18, 12/6; 19, 13/6 per cwt. Galvanized, No. 0 to 6, 3/6 per cwt. extra. Best annealed drawn Fence Wire, oiled, No. 0 to 6, £7; 7, £7; 8, £7. 10/; 9, £7. 15/ per ton. Galvanized, No. 0 to 6, £10. 10/; 7, £10. 15/; 8, £11. 5/; 9, £11. 15/ per ton. Steel Fence Wire, round or oval, 5/ per ton extra. Black Rolled Fence Wire, 4 or 5, £6. 5/ per ton. Tinned Bottling Wire, No. 22, 30/; 23, 31/3; 24, 33/9 per cwt., cut in lengths and made up in 7-lb parcels. Fine Galvanized Iron Wire, No. 23, 32/6 per cwt.; Cast Steel Wire, 0/4 to 0/8½ per lb.; Charcoal Iron Wire, 3/6 per cwt. extra; tinned ditto, 8/6 per cwt. extra, delivered in London; 7/6 per ton extra in Liverpool.

### Exports.

PER BARK JOHN BAIZLEY, JANUARY 10, 1889, FOR BRISBANE, AUSTRALIA.

By R. W. Forbes & Son.—6 dozen Pick Handles, 1 case Hardware, 10 dozen Hatchets, 22 sets Axes, 6 sets Wheels, 26 dozen Axe Handles, 10 dozen Picks, 5 boxes Picks, 12 packages Corn Shellers, 30 dozen Shovel Handles, 2 cases Hardware, 22 dozen Pick Handles, 2 dozen Mallets, 12 packages Stoves, 8 dozen Axes, ½ gross Axe Grease, 82 dozen Axe Handles, 10 dozen Hatchets, 8 packages Hardware, 18 dozen Handles, 1 dozen Meat Cutters, 19 dozen Hatchets, 54 dozen Handles, 4 packages Hardware, 1 tierce Hardware, 2 dozen Snaths, 4 dozen Mattocks, 73 packages Stoves, 16 packages Stoves, 20 dozen Axe Handles, ½ dozen Meat Cutters, 1½ dozen Cutters, 27 boxes Belt Studs, 12 packages Stoves, 60 dozen Axes, 1014 dozen Handles, 45 dozen Shovel Handles, 30 packages Stoves, 1000 Broom Handles, 12 packages Corn Shellers, 9 dozen Forks, 20 dozen Axes, 20 gross Shade Rollers, 30 dozen Axes, 1½ gross Axe Grease, 15 packages Hardware, 7 cases Hardware, 1 case Dashers, 7 crates Corn Shellers, 1 case Pencils, 1 case Hardware, 300 Carriage Bolts, 9 crates Stoves, 12 boxes Axes, 12 dozen Picks.

By A. S. Lascelles & Co.—39 packages Lampware, 1 case Wicks.

By F. B. Wheeler & Co.—13 cases Clocks, 40 dozen Brushes, 4½ dozen Brushes, 36 Clocks. By Winchester Repeating Arms Company.—24 Guns, 3000 Cartridges.

By New Haven Clock Company.—26 cases Clocks.

By Ansonia Clock Company.—150 Clocks, 2.2 Clocks.

By Crane & McMahon.—5 cases Carriage-Ware.

By G. P. Patterson.—2217 pounds Cordage.

By H. W. Peabody & Co.—35 packages Carriage-Ware, 1763 pounds Nails, 5550 pounds Bolts, 18 cases Hardware, 6 cases Mattocks, 32 packages Agricultural Implements, 5 crates Emery Wheels, 7 crates Agricultural Implements, 316 dozen Handles, 1 case Edge Tools, 9 cases Carriage-Ware, 1 case Wheelbarrows, 50 cases Edge Tools, 66 packages Hardware, 3 dozen Blacking, 6 packages Lampware, 1050 feet Hose, 119 packages Hardware 80 packages Lampware, 5 pack-

ages Lawn Mowers, 81 sets Axes, 13 crates Agricultural Implements, 4 cases Iron Mills, 4 cases Castings, 2 cases Tacks, 31 cases Hardware, 5 cases Pumps, 1 case Lampware, 4 cases Fire Arms, 12 packages Machinery, 3 packages Blacking, 1 case Hardware, 14 packages Shellers, 2 packages Ironware, 5 cases Toys, &c.

### FOR HOBART.

By W. H. Crossman & Bro.—6 dozen Axes, 12 dozen Hatchets, 6 dozen Mattocks, 337 Clocks, 5 cases Tools, 5 dozen Churns, ¼ dozen Coffee Mills, 11-12 dozen Meat Choppers, ¼ dozen Sausage Stuffers, 3 cases Hardware, 4 dozen Bench Screws, 5 cases Hardware, 1 case Skates, 60 gross Wicks, 30 gross Shade Rollers, 24 boxes Clothes Pins, 1 dozen Store Trucks, 2 dozen Miter Boxes, 1 dozen Manglers, 1 dozen Wringers, 18 dozen Rat Traps, 2 cases Hardware, 1 gross Mop Handles, 6 dozen Pruning Shears, 56 dozen Axes, 12 dozen Hatchets, 6 dozen Mattocks, 36 dozen Axes, 18 gross pounds Blacking, 200 Oil Stoves, 2 dozen Meat Cutters, 12 cases Jacks.

By R. W. Forbes & Son.—4 packages Lampware, 1 package Wringers and Parts, 1 box Boring Machine, 1 package Blocks, 1 package Hardware, 3 packages Feed Cutters, 9 Velocipedes, ¼ dozen Carpet Pullers, 2 cases Toys, 80 kegs Cut Nails, 12,960 pieces Roofing Slate, 26,070 pieces Roofing Slate, 150 dozen Axe Handles, 15 dozen Axes.

By F. H. Odiome.—14 cases Brooms.

By Arkell & Douglas.—10 dozen Axes, 5 dozen Blacking, 68 dozen Axes, 1 dozen Wringers, 12 dozen Pails, 2 cases Barrows.

By D. C. Pratt.—408 dozen School Slates.

PER BARK MABEL, JAN. 15, 1889, FOR DUNEDIN, NEW ZEALAND.

By Edward Miller & Co.—9 packages Lamp Goods.

By Ansonia Clock Co.—15 boxes Clocks.

By W. K. Freeman.—41 gross Hardware, 8,400 lbs. Grease, 950 lbs. Wringers, 6050 lbs. Horse Nails, 70 Scales.

By A. S. Lascelles & Co.—1 case Barometers, 1 case Razor Strops, 4 packages Lampware, 4 dozen Cradles.

By R. W. Forbes & Son.—25 dozen Axes, 150 dozen Axe Handles, 52 dozen Brooms, 100 boxes Clothes Pins, 64 dozen School Slates.

By Arkell & Douglas.—6 dozen Wrenches, 280 lbs. Nails, 1½ dozen Braces, 6 dozen Handles, 4 dozen Cotton Hooks, 12 dozen Handles, 1 gross Handles.

By Mailer & Quereau.—200 cases Clothes Pins, 125 dozen Brooms, 36 cases Sewing Machines, 1 case Harrows, 1 case Castings.

By W. H. Crossman & Bro.—34 packages Lamp Goods, 24 gross Wicks, 6 dozen Traps, 1 case Hardware, 2 bundles Washboards, 75 dozen Brooms, 1 case Tools, 950 lbs. Nails, 1 dozen Traps, 12 cases Hardware, 4 cases Tools.

By R. W. Forbes & Son.—12 dozen Sad Irons, 6 dozen Washboards, 12 dozen Oilers, 1 case Toy Banks, 1 case Stamped-Ware, 12 packages Stoves, 25 pounds Staples, 16 packages Washboards, 2 Manglers, 1 dozen Lemon Squeezers, 5 dozen Hatchets, 5 dozen Axes, 12 dozen Spades, 5 dozen Axes, 6 dozen Axe Handles, 5 packages Hardware, 59 pounds Sand Paper.

By R. W. Cameron & Co.—1 Churn, 1 Butter Worker, 20 Dairy Machines, 77 dozen Handles, 7 dozen Hammers, 2 dozen Braces, 100 dozen Hardware, ¼ dozen Store Trucks, ¼ dozen Churns, 1 dozen Sad Irons, 40 pounds Sash Cord, 1 dozen Hoes, 8 dozen Axes, Hatchets, &c., 6 dozen Hardware, 5 dozen Saws, 100 pounds Oil Stoves, 3 reams Sand Paper, 350 pounds Nails.

By Strong & Trowbridge.—1 case Wringers, 1 case Tools, 1 case Hardware, 2 cases Hatchets, 1 package Traps, 1 case Traps, 1 case Wringers, 1 package Tools, 1 case Saws, 1 case Hay Knives, 1 case Tools, 2 barrels Lampware, 1 Package Tinware, 6 cases Axes, 36 dozen Axe Handles, 2 cases Rake Handles, 2 cases Shade Rollers, 1 case Hammers, 3 cases Choppers, 2 cases Pumps, 2 cases Wringers, 3 crates Churns, 3 boxes Hardware, 1 crate Churns, 6 cases Matches, 1 case Carpet Sweepers, 1 case Sluice Forks, 20 dozen Small Brooms, 1 case Forks, 2 cases Wringers, 1 case Clocks, 8 cases Axes, 2 cases Rivets, 12 cases Tools, 1 crate Pails, 21 crates Stoves and Ranges, 1 bale Rubber Springs, 1 cask and 2 cases Pumps, 10 cases Axes, 1 barrel Blocks, 2 cases Wood Working Machinery, 57 packages Pails, Tubs, &c., 1 case Spirit Levels, 2 crates Stoves, 1 case Clocks, 1 case Hardware, 1 case Tools, 7 cases Hardware, 11 bundles Oars, 6 crates Trucks and Parts, 7 cases Hardware, 4 cases Wringers, 7 cases Clothes Pins.

By H. W. Peabody & Co.—30 packages Hardware, 4 packages Agricultural Implements, 24 dozen Shade Rollers, 3 cases Lampware, 55 packages Stoves, 8 cases Glue, 12 cases Nails, 380 dozen Handles, 6 sets Axes, 125

gross Fire Arms, 26 gross Blacking, 1 case Eyelets, 1 bundle Hardware, 300 pounds Twine, 10 packages Hardware, 2 packages Lampware, 700 Bolts and Nuts, 24 packages Stoves, 1 case Mills, 11,200 pounds Barb Wire, 40 dozen Handles, 1 case Carriage-Ware, 2 cases Agricultural Implements, 3 crates Churns, 3 cases Hardware, 36 Car-Wheels, 1 bale Hose, 2 barrels Lampware, 2 cases Wringers, 1 case Hardware, 1 case Axe Arms, 2 dozen Wringers, 1 case Fan Mills, 2 cases Agricultural Implements, 4 dozen Wringers.

By Chas. Brewer & Co.—5 cases Handles, 22-400 pounds Wire, 2 cases Tools, 8 cases Nails, 1 case Hardware, 2 cases Trucks, 12 cases Handles, 1 case Hardware, 1 case Carriage Woodware, 16 cases Tools, 8 crates Stoves, 4 cases Hardware, 1 bale Rubber, 3 cases Agricultural Implements, 14 packages Creamery Goods, 6 packages Creamery Goods, 57 cases Handles, 6 cases 3 bundles Carriage Woodware, 46 cases 1 barrel Tools, 31 crates Stoves, 8 packages Hollow-Ware, 16 cases Hardware, 35 cases Nails, 1 bale Rubber, 2 cases Flint Paper, 1 case Blacking, 6 crates Pails, 9 cases Handles, 2 cases Brooms, 3 cases Tools, 21 bundles Carriage Woodware.

PER BRIG STELLA, JANUARY 17, 1889, FOR LYTTELTON, NEW ZEALAND.

By D. C. Pratt.—440 dozen School Slates.

By A. S. Lascelles & Co.—4 packages Lampware.

By A. Field & Co.—593 pounds Hardware, 10 dozen Wood Handles, 32 dozen Handles, 3 Drills.

By Edward Miller & Co.—28 packages Lamp Goods, 21 packages Lamp Goods, 15 packages Lamp Goods, 9 packages Lamp Goods.

By F. B. Wheeler & Co.—24 dozen Axe Handles.

By Coombs, Crosby & Eddy.—25 dozen Lamp Goods.

By Hoadley & Co.—10 cases Hardware, 18 Churns.

By W. H. Crossman & Bro.—1 case Hardware.

By R. W. Forbes & Co.—40 dozen Whip Handles, 1 case Saddlery, 712 pounds Carriage Bolts, 2 packages Carriage Woodwork, 3 packages Hardware, 10 packages Lawn Mowers, 26 packages Lawn Mowers, 1 dozen Wringers, 30 dozen Axe Handles, 24 dozen Axes, 1 dozen Drills.

By Arkell & Douglas.—6 dozen Axes, 12½ dozen Axes, 4 dozen Braces, 9 dozen Wrenches, 2 dozen Saws, 1 dozen Scales, 110 pounds Cordage, 10 gross Shade Rollers, 4 dozen Hatchets, 6 dozen Hammers, ½ dozen Wringers, 46 dozen Handles, 2 dozen Latches, 1½ dozen Churns, 1 dozen Trucks.

By Mailer & Quereau.—36 dozen Handles, 6 dozen Snaths, 1 case Shade Rollers, 1 case Oil Stones, 1 case Wire Goods, 1 case Egg Beaters, 12 sets Axes, 1 case Oilers, 3 cases Hardware, 6 cases Wringers, 1 case Traps, 1 case Printing Presses, 120 dozen Brooms, 100 cases Clothes Pins.

By H. W. Peabody & Co.—1 ton Wire, 1 case Tools, 12 cases Wringers, 15 cases Tools, 80 dozen Handles, 7 packages Lampware, 25 dozen Brooms, 4480 pounds Horse Nails, ¼ gross Blacking, 108 dozen Tools, 9 cases Handles, 30 packages Sewing Machines, 12 packages Hardware, 8 packages Lampware, 8 packages Machinery, 9520 pounds Nails, 30 cases Blacking, 1 package Razors, 12 packages Hardware, 50 dozen Brooms, 5 cases Handles.

PER BARK OKONOM, JANUARY 23, 1889, FOR PORT NATAL, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—6 Pumps, 12 dozen Handles, 34 dozen Picks, 6 dozen Agricultural Implements, 4 dozen Tools, 11 dozen Picks, 2½ dozen Step Ladders, 1 gross Brooms, 48 Plows, 20 Agricultural Implements, 4 dozen Picks, 4 dozen Forks, 2½ dozen Step Ladders, 1 dozen Bench Screws, 12 Wringers, &c., 1 dozen Churns, 6 dozen Sewing Machines, 40 Plows, 4 dozen Picks, 32 dozen Handles, 1 case Slates, 25 dozen Brooms, 12 Washers, 1 case Tools, 2 Scales, 2 dozen Axes, 120 Plow Parts, 25 dozen Brooms, 24 dozen Handles, 6 dozen Spades, 48 Plows and Parts, 12 Wringers, &c., 6 Store Trucks, 1 case Plow Handles, 6 Corn Shellers, 120 dozen Handles, 12 gross Stove Blacking, 6 dozen Washboards, 10 boxes Clothes Pins, 12 Washing Machines, 6 Corn Shellers, 25 packages Carriage-Ware, 66 Plows, 378 pieces Agricultural Implements, 12 Corn Shellers, 6 Hand Carts, 2 dozen Meat Cutters, 1 dozen Churns, 250 Handles, 10 boxes Clothes Pins, 28 Washing Machines, 2½ dozen Tools, 6 Manglers, 28 dozen Edge Tools, 18 Ladders, 3 Pumps, 5 cases Hardware, 6 Saws, 5 Pumps, 20 crates Axes.

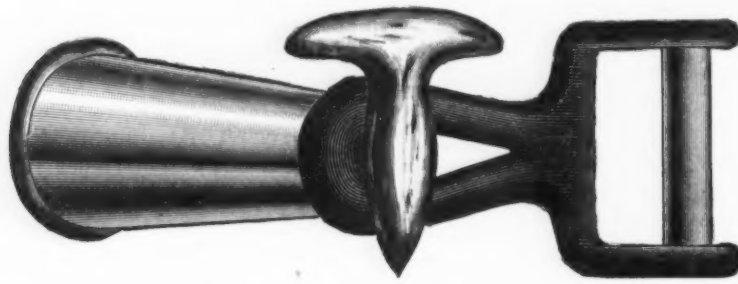
By Woodhouse & Stortz.—60 barrels Hardware.

By M. Berliner.—30 Carts.

By W. H. Crossman & Bro.—26 packages Stoves, 36 cases Plow Parts.

**The Burgett Safety Whiffletree Hook.**

The illustration given herewith represents a new whiffletree hook, now being offered to the trade by Michael Greenbaum's Sons, 9 and 11 North Canal street, Chicago, who have secured the exclusive sales agency. In the illustration the trace-

*The Burgett Safety Whiffletree Hook.*

lines leading to the West was held at the Monongahela House, Pittsburgh, on Friday, the 25th inst. The object of the meeting was to discuss freight rates, the companies having advanced rates on January 1 from 10 to 25 per cent. Considerable dissatisfaction was expressed by the pig iron manufacturers at the advance, and it was decided to ask the railroad repre-

sentatives to meet them and hear their arguments on the subject, which they claimed would show that the advance was unwarranted. After hearing the arguments made by the pig iron manufacturers it was decided to bring the matter before the meeting of the presidents of the trunk lines to be held in Pittsburgh on the 31st inst. It is the general impression that a reduction in the rates will be made.

**New Gravity Push and Pull Hinge.**

This article is put on the market by William P. Kellogg, Troy, N. Y., for whom Fuller Bros., 33 Chambers street, New York, are agents. It is represented in the accompanying illustration, from which it will be seen that it embodies new features. The points claimed for it are: That it is operated by pushing and pulling, and not lifting a dead weight, as in other hinges; that there is no danger of lifting the blind off the pintles and dropping it, as sometimes occurs with those in use; that it locks the blinds open, and also locks them when closed, and that for this reason no inside fasteners are required; and that they are provided with a back stop that positively prevents rattling of the blinds. Having these features, the point is also made that in their use there is a saving of fully one-fourth of the labor

will carry 300 saloon, 150 cabin and 750 steerage passengers. Electric lights illuminate every part of the ship, and instead of four masts with square yards she has three pole masts.

**Steel Pocket Tape.**

This article, which is represented in the accompanying illustration, is put on the market by the Lufkin Rule Company, Cleveland, Ohio. It is a steel tape made in 3, 4, 5 and 6 foot lengths, self-winding and operated by the slide shown, the case being nickel plated. This is the most re-

*Steel Pocket Tape.*

cent addition by the company to their line of steel measures.

Dr. Gatling, of Hartford, has invented a torpedo boat which he thinks has solved the problem of harbor defence. Four of them can be built for \$100,000. Its action is controlled wholly by the intelligence of operators in it, and the boat moves at extremely high speed. Until patents are secured Dr. Gatling gives no further information.

The new White Star steel steamship Teutonic has been successfully launched from the yard of Harland & Wolff, her builders, at Belfast, Ireland. She is the longest ship afloat, measuring 582 feet. Her beam is 57 feet 6 inches, her depth 39 feet 4 inches, her gross tonnage 10,000. Triple expansion engines will drive her twin propellers with manganese bronze blades, and she is so fitted that 12 guns can be mounted on her in 48 hours. She

**The Perfection Key Holder.**

This article is manufactured by the Ames Sword Company, Chicopee, Mass. It consists of a spring padlock  $\frac{1}{2}$  inch in

*The Perfection Key Holder.*

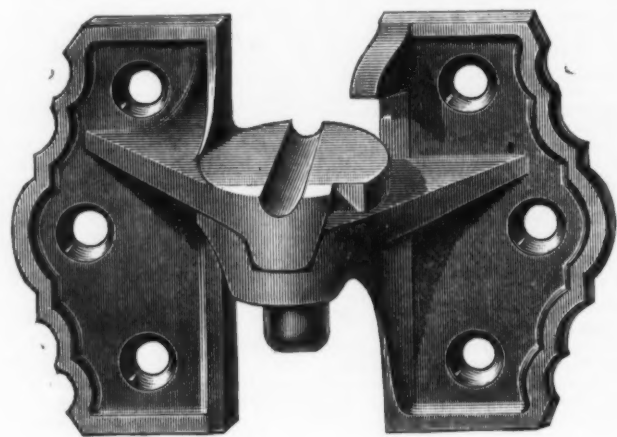
diameter, with a small chain attached to the eye in the shackle. The keys are to be strung on a chain, the end of which is passed over the shackle and the latter closed. It can readily be opened with a common pin. The whole is handsomely nicked, and is tasteful, useful and durable. The advantage of a chain instead of a ring for holding keys is especially alluded to as conducing much to the ease and comfort of carrying them.

The new freight tariff on iron and steel between Chicago, Peoria and Mississippi River points on the Rock Island railroad and St. Paul and Minneapolis is as follows: Railway supplies, 11 $\frac{1}{2}$  cents; iron or steel rails, \$2.25 per ton; street railway yokes, &c., 15 cents; pig iron, per ton, \$2.50; bar iron and similar commodities, nails, &c., 15 cents; cast-iron pipe, 15 cents; wrought iron-pipe, 17 $\frac{1}{2}$  cents. The rate given is per 100 pounds, except in the cases noted, and is for straight carloads.

A meeting of the pig iron manufacturers of the Mahoning and Shenango valleys and the managers of the various railroad

and one-fifth of the screws required in putting up blinds with the ordinary hinges. The manufacturer also calls attention to the fact that there is no loss of security in dispensing with inside fastenings, such as are used with other hinges, inasmuch as the function of such fasteners is to keep the blind in place when closed, they not being a protection against burglars, as they are easily opened by inserting the

A stock company is being formed at Decatur, Ill., to bore for natural gas at that place, a former attempt having been unsuccessful.

*New Gravity Push and Pull Hinge.*



## CURRENT HARDWARE PRICES.

JANUARY 30, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Ammunition.—

Caps, Percussion, 1000—	
Hicks & Goldmark's	
F. L. Waterproof, 1-10's	50¢
E. B. Trimmed Edge, 1-10's	65¢
E. B. Grnd. Edge, Cent. Fire	25¢
1-10's, 70¢	75¢
Double Waterproof, 1-10's	\$1.40
Musket Waterproof, 1-10's	50¢
G. D.	28¢
S. B.	30¢
Union Metallic Cartridge Co.	
F. C. Trimmed	50¢
F. L. Ground	65¢
Cent. Fire Ground	70¢
Dbl. Waterproof, 1-10's	\$1.40
Dbl. Waterproof, 1-10's	\$1.40
S. B. Genuine Imp. ortd.	45¢
Eley's E. B.	54¢
Eley's D Waterproof, Central Fire	\$1.00

Cartridges.	
Rim Fire Cartridges	50¢ & 52¢
Rim Fire Military	15¢ & 2¢
Cent. Fire, Pistol and Rifle	25¢ & 52¢
Cent. Fire, Military and Sporting	15¢ & 52¢

Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.	
Blank Cartridges, 22 cal.	\$1.75, dis 2¢
Blank Cartridges, 32 cal.	\$3.50, dis 2¢
Primed Shells and Bullets	15¢ & 52¢
B. B. Caps, Round Ball	\$1.75, dis 2¢
B. B. Caps, Con. Ball, Swgd.	\$2.00, dis 2¢

Primers—	
Berdan Primers	\$1.00, dis 2¢
B. L. Caps (for Sturtevant Shells)	\$1.00, dis 2¢
All other Primers	\$1.20, dis 2¢

Shells—	
First quality, 4, 8, 10 and 12 gauge	25¢ & 10¢ & 2¢
First quality, 14, 16 and 20 gauge (810 list)	30¢ & 10¢ & 2¢
Star, Club, Rival and Climax brands, 10 and 12 gauge	33¢ & 10¢ & 2¢
Club, Rival and Climax brands, 14, 16 and 20 gauge	30¢ & 10¢ & 2¢
Seibold's Comb. Shot Shells	15¢ & 2¢
Brass Shot Shells, 1st quality	60¢ & 2¢
Brass Shot Shells, Club, Rival, Climax	65¢ & 2¢
I X L, 10 and 12 gauge	40¢ & 52¢
"Special," 16 gauge	30¢ & 10¢ & 52¢
"Special," 10 and 12 gauge	40¢ & 10¢ & 52¢
Fowler's Pat.	\$3.25

Shells Loaded—	
A. M. Co. List No. 19, 1887	20¢ & 10¢
Wads—	
U. M. C. & W. R. A.—B. E., 11 up.	\$2.00
U. M. C. & W. R. A.—B. E., 9&10	2.30
U. M. C. & W. R. A.—B. E., 7&8	2.60
U. M. C. & W. R. A.—P. E., 11 up.	3.10
U. M. C. & W. R. A.—P. E., 9&10	3.40
U. M. C. & W. R. A.—P. E., 7&8	4.90
Eley's B. E., 11 up.	\$1.75
Eley's P. E., 11 up.	2.80

Anvils—	
Eagle Anvils	10¢, dis 20¢ & 20¢ & 5¢
Peter Wright's	95¢
Armitage's Mouse Hole	87¢
Armitage's Mouse Hole, Extra	11¢ & 11¢
Trenton	9¢ & 9¢
Wilkinson's	9¢ & 10¢
J. & Riley Carr, Pat. Solid	11¢ & 11¢
Moore & Barnes Mfg. Co.	33¢ & 5¢

Anvil Vice and Drill—	
Millers Falls Co.	\$18.00, dis 20¢
Cheney Anvil and Vice	35¢
Allen Combined Anvil and Vice	dis 40¢ & 10¢

Apple Parers—	
Advance	10¢ doz \$4.75
Antrim Combination	10¢ doz 5.50
Baldwin	10¢ doz 5.25
Champion	10¢ doz 7.25
Eureka, 1888	each 17.00
Family Bay State	10¢ doz 12.00
Gem	10¢ doz 6.25
Gold Medal	10¢ doz 4.00
Hudson's New '88	10¢ doz 3.75
Ideal	10¢ doz 4.75
Improved Bay State	10¢ doz 30.00
Little Star	10¢ doz 5.00
Monarch	10¢ doz 13.50
New Lightning	10¢ doz 5.50
Oriole	10¢ doz 4.00
Penn.	10¢ doz 4.00
Perfection	10¢ doz 4.00
Pomona	10¢ doz 4.00
Rocking Table	10¢ doz 6.00
Turntable	10¢ doz 4.50
Victor	10¢ doz 13.50
Waverly	10¢ doz 4.50
White Mountain	10¢ doz 4.50
72	10¢ doz 4.25
78	10¢ doz 6.50

Augers and Bits—	
Douglas Mfg. Co.	
Wm. A. Ives & Co.	
Humphreysville Mfg. Co.	70%
French, Swift & Co. (F. H. Beecher,	
Cook's, Douglas Mfg. Co.	55%
Cook's, N. H. Copper Co. 50¢ & 10¢ & 50¢ & 10¢	
Ives' Circular Lip	60%
Patent Solid Head	30%
C. E. Jennings & Co., No. 10, extension	
lip	40%
C. E. Jennings & Co., No. 30	60%
C. E. Jennings & Co., Auger Bits	32% quarters, No. 5, 30¢, 33¢, dis 10%
Lewis' Patent Single Twist	45%
Jennings' Augers and Bits	25%
Imitation Jennings' Bits	60¢ & 60¢ & 5¢
Pugh's Black	20%
Car Bits	50¢ & 60¢
L'Hommedieu Car Bits	15¢ & 10¢
Orstner Pat. Auger Bits	10%

## Hollow Augers—

Ives'	
French, Swift & Co.	25¢ & 10¢ & 25¢
Douglas	810¢ & 5¢
Boney's Adjustabl.	10¢ doz \$18, dis 40¢ & 10¢
Stearns'	20¢ & 10¢
Ives' Expansive, each \$4.50	dis 50¢ & 5¢
Universal Expansive, each \$4.50	dis 20%
Wood's	25¢ & 25¢ & 10%

## Expansive Bits—

Clarks' small, \$18; large, \$26	35¢ & 35¢ & 5¢
Ives' No. 4, 10¢ doz \$60	dis 40%
Swan's	40%
Stearns, No. 1, \$25; No. 2, \$22	dis 35%
Stearns' No. 2, \$18	dis 20%

## Gimlet Bits—

Common	10¢ gross \$2.75 @ \$3.25
Diamond	10¢ doz \$1.10; dis 25¢ & 10%
"Boe"	25¢ & 25¢ & 5¢
Double Cut, Shepardson's	45¢ & 45¢ & 5¢
Double Cut, Ct. Valley Mfg. Co.	30¢ & 10%
Double Cut, Hartwell's, 10¢ gro.	\$5.25
Double Cut, Douglass'	40¢ & 10%
Double Cut, Ives'	60¢ & 60¢ & 5¢

## Bit Stock Drills—

Morse Twist Drills	50¢ & 10¢ & 5¢
Standard	50¢ & 10¢ & 5¢
Cleveland	50¢ & 10¢ & 5¢
Syracuse, for metal	50¢ & 10¢ & 5¢
Syracuse, for wood (wood list)	30¢ & 30¢ & 5¢
Williams' or Holt's, for metal 50¢ & 10¢ & 10%	
Williams' or Holt's, for wood	40¢ & 10%

## Ship Augers and Bits—

L'Hommedieu's	15¢ & 10¢ & 15¢ & 10¢ & 5¢
Watrous'	15¢ & 10¢ & 15¢ & 10¢ & 10%
Snell's	15¢ & 10¢ & 15¢ & 10¢ & 5¢
Snell's Ship Auger Pat'n Car Bits	15¢ & 10¢ & 15¢ & 10¢ & 5¢

## Awl Hafts—

Sewing, Brass For. 10¢ gr.	\$3.50, 45¢ & 10%
Pat. Sewing, Short	\$1.00 10¢ doz, dis 40¢ & 10%
Pat. Sewing, Long	10¢ doz \$1.20
Pat. Peg, Plain Top	10¢ gr \$10.00, 45¢ & 10%
Pat. Peg, Leather Top	10¢ gr \$12.00, 45¢ & 10%

## Awls, Brad Sets, &amp;c—

Awls, Sewing, Common	10¢ gr \$1.70, 35%
Awls, Should. Peg	10¢ gr \$2.45, 40¢ & 40¢ & 10%
Awls, Pat. Peg	10¢ gr 65¢, dis 40¢ & 40¢ & 10%
Awls, Shouldered Brad	2.70 10¢ gr, dis 35%
Awls, Handled Brad	2.75 10¢ gr, dis 45%
Awls, Handled Scratch	10¢ gr, \$7.50, 35¢ & 10%
Awls, Socket Scratch	10¢ doz, \$15.00, 25¢ & 30%

## Awl and Tool Sets—

Alken's Sets, Awls and Tools, No. 20	10¢ doz \$10.00, dis 55¢ & 10%
Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9	dis 25¢ & 25¢ & 10%
Miller's Falls Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$18; 4, \$18	dis 25%
Henry's Combination Haft	10¢ doz \$6.50
Brad Sets, No. 42, \$10.50; No. 43, \$12.50; No. 44, \$12.50	dis 70¢ & 10¢ & 5¢
Brad Sets, Stanley's Excelsior	No. 1, \$7.50; No. 2, \$4.00; No. 3, \$6.50
	30¢ & 10%

## Axes—

Makers' and Special Brands—	
First quality	10¢ doz \$6.00 @ \$6.50
Others	10¢ doz \$5.50 @ \$6.75

## Axle Grease—

Fraser's	10¢ Keg 10 4¢, 10 5¢ net
Fraser's, in boxes	10¢ gr \$9.50
Dixon's Everlasting, in box	10¢ doz 10
Dixon's Everlasting	\$1.20 2 10¢ doz \$2.00
Lower grades, special brands	10¢ gr \$5.50 @ \$8.5¢

## Axles—

No. 1	4¢ @ 4 1/4¢, No. 2 5 1/4¢ @ 5 1/2¢
No. 10 to 22	5¢ @ 10¢ & 10¢
National Wrought Steel Tubular Self-Oiling	Standard Farm (1 to 5) and Special Farm (A1 to A5)
Less than 10 sets	33¢ & 5¢
Over 10 sets	33¢ & 5¢

## Bag Holders.

Sprengle's Pat.	10¢ doz \$18, dis 60%
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## Balances—

Spring Balances	50%
Common 24-lb	10¢ doz \$1.50, dis 50%
Chatillon's Spring Balances	50%
Chatillon's Circular Spring Balances	60%

## Bells—

## Hand—

Light Brass	70¢ & 10%
Extra Heavy	60¢ & 10%
Silver Chime	33¢ & 10%
Globe (Cone's Patent)	25¢ & 10¢ & 35%

## Door—

Gong, Abbe's	33¢ & 10%
Gong, Yankee	45¢ & 10%
Gong, Barton's	40¢ & 10¢ & 50%
Crank, Taylor's	25¢ & 10%
Crank, Brooks'	50¢ & 10¢ & 25%
Crank, Cone's	10%

Crank, Connel's	20¢ & 10%
Lever, Sargent's	60¢ & 10%
Lever, Taylor's Bronzed or Plated	net
Lever, Taylor's Japanned	25¢ & 10%
Lever, R. E. M. Co.'s	50¢ & 10¢ & 25%
Pull, Brook's	50¢ & 10¢ & 25%
Pull, Western	25¢ & 10%

Common Wrought	60¢ & 10%
Western	20¢ & 10%
Western, Sargent's list	70¢ & 10%
Kentucky, "Star"	20¢ & 10%
Dodge, Genuine Kentucky	70¢ & 70¢ & 10%
Texas Star	50¢ & 10¢ & 50¢ & 10¢ & 5¢
Call	40¢ & 40¢ & 5¢
Farm Bells	10¢ 3¢ & 3¢
Steel Alloy Church and School Bells	40%

## Bellows—

Blacksmiths'	50¢ & 10¢ & 50¢ & 60%
Molders	40¢ & 40¢ & 10%
Hand Bellows	40¢ & 10¢ & 50%

## Belting, Rubber—

Common Standard	70¢ & 10%
Standard	70¢ & 70¢ & 5¢
Extra	60¢ & 5¢ & 60¢ & 10%
N. Y. B. & P. Co., Carbon	60¢ & 10¢ & 5¢
N. Y. B. & P. Co., Diamond	50¢ & 10%

## Bench Stops—

Morrill's	10¢ doz \$9, dis 50%
Hotchkiss's	10¢ doz \$5, dis 10¢ & 10¢ & 10%
Weston's, No. 1, \$10; No. 2, \$9.25	dis 10¢ & 5¢
McGill's	10¢ doz \$3, dis 10%

## Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
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## Bit Holders—

Extension, Barber's	10¢ doz \$15.00, dis 40¢ & 40¢ & 10%
Extension, Ives	10¢ doz \$20.00, dis 60¢ & 10%
Diagonal	10¢ doz \$24.00, dis 40%
Angular	10¢ doz \$24.00, dis 40¢ & 5¢

## Blind Adjusters—

Domestic	10¢ doz \$3.00, dis 33¢ & 45¢
Excelsior	10¢ doz \$10.00, dis 50¢ & 10¢ & 25%
Washburn's Self-Locking	20¢ & 20¢ & 10%

## Blind Fasteners—

Mackrell's	10¢ doz, dis 20¢ & 20¢ & 10%
Van Sand's Screw Pat.	\$15 10¢ gr, 60¢ & 10%
Van Sand's Old Pat.	\$15.00 10¢ gr, 55¢ & 10%
Washburn's Old Pattern	\$9.00 10¢ gr net
Merriman's	new list, net
Austin & Eddy No. 2008	\$3.00 10¢ gr net
Security Gravity	\$9.00 10¢ gr net

## Blind Staples—

Barbed, 1/4 in. and larger	10¢ 7 1/2¢ @ 8¢ net
Barbed, 3/4 in.	10¢ 8 1/2¢ @ 9¢ net

## Blocks—

Cleveland Block Co., Mal. Iron	50%
Novelty Tackle Blocks, Mal. Iron	50%

## Bolts—

Door and Shutter—	
Cast Iron Barrel, Square, &c.	70¢ & 70¢ & 10%
Cast Iron Shutter Bolts	70¢ & 70¢ & 10%
Cast Iron Chain (Sargent's list)	65¢ & 10%
Ives' Patent Door Bolts	60%
Wrought Barrel	70¢ & 70¢ & 10%
Wrought Square	70¢ & 70¢ & 10%
Wrt Shutter, all Iron, Stanley's	60¢ & 10%
Wrt Shutter, Brass Knob	40¢ & 10%
Wrt Shutter, Sargent's list	60¢ & 10%
Wrt Sunk Flush, Sargent's list	55¢ & 10%
Wrt Sunk Flush, Stanley's list	50¢ & 10%
Wrt B.K. Flush, Com'n	55¢ & 10%

## Carriage, Machine, &amp;c.—

Com. list June 10, '84	75¢ & 21¢ & 2¢
Genuine Eagle, list Oct. '84	75¢ & 10%
Phila. pattern, list Oct. '84	75¢ & 10%

R.B.W., old list	70%
Machine, according to size	75¢ & 10¢ & 80%
Bolt Ends, according to size	75¢ & 10¢ & 80%

## Fire—

Common, list Feb. 28, '83	70%
P.C.B. & N. Co., Empire, list Feb. 28, '83	70%
P.C.B. & N. Co., Phila., list Oct. '84	82%
P.C.B. & N. Co., Keystone, Philadel., list Oct. '84	80%
P.C.B. & N. Co., Norway, Philadel., list Oct. '84	75% & 10%
Am.S.Co., Norway, Phil., list Oct. 16, '84	75% & 10%
Am.S.Co., Eagle, Phil., list Oct. 16, '84	80%
Am.S.Co., Philadel., list Oct. 16, '84	82%
Am.S.Co., Bay State, list Feb. 28, '83	70%
R.B. & W., Philadel., list Oct. 16, '84	82%
R.B. & W. Mfg. Co.	70%

## Stove and Plow—

Stove	62 1/2%
Plow	60¢ & 5¢
Am. S. Co. Stove, Annealed	62 1/2%
R. B. & W., Plow	55%
R. B. & W., Stove	62 1/2%
R. B. & W. Mfg. Co., Stove	62 1/2%

## Borax—

## Boring Machines—

Without	
Augers. Upright. Angular. Dis.	
Douglas	\$5.50 \$6.75
Snell's, Rice's Pat.	5.50 6.75
Jennings	5.50 6.75
Other Machine	2.35 2.75
Phillips' Patent	7.00
with Augers	7.50

## Bow Pins—

Humason, Beckley & Co.'s	60¢ & 10%
Sargent & Co.'s	\$17 and \$18, dis 60¢ & 10%
Peck, Stow & W. Co.	50¢ & 10¢ & 50¢ & 10¢ & 5¢

## Braces—

Barber's	
Nos. 10 to 16.....	50%
Nos. 30 to 33.....	K50%
Nos. 40 to 63.....	50¢ & 10%
Barker's	
Nos. 8, 10 and 12.....	75¢ & 10¢ & 80%
Plated, Nos. 8, 10 and 12.....	65¢ & 10¢ & 70%
Osgood's Ratchet.....	40¢ & 10¢ & 50%
Spofford's.....	50¢ & 10%
Ives' New Haven Novelty.....	70¢ & 70¢ & 5¢
New Haven Ratchet.....	60¢ & 5¢ & 60¢ & 10%
Barber Ratchet.....	60¢ & 5¢ & 60¢ & 10%
Barbers.....	60¢ & 5¢
Spofford.....	60¢ & 5¢ & 60¢ & 10%
Common Ball, American.....	\$1.10¢ & \$1.15
Barker's New	
Nos. 25, 27 and 30.....	50¢ & 10¢ & 60¢ & 5¢
Nos. 117, 118, 119.....	70¢ & 70¢ & 5¢
Amidon's	
Barker's Imp'd Plain.....	75¢ & 10¢ & 80%
Barker's Imp. Nickeled.....	65¢ & 10¢ & 70%
Ratchet.....	75¢ & 10¢ & 80%
Eclipse Ratchet.....	60%
Globe Jawed.....	40¢ & 40¢ & 10%
Corner Brace.....	40¢ & 40¢ & 10%
Ball & S in., \$2.10; 10 in.....	\$1.10¢ & \$1.15
Buffalo Ball.....	\$1.10¢ & \$1.15
P. S. & W.....	50¢ & 10%

**Cards—**

Horse & Curry.....10&10&10&10&10  
 Cotton.....New list, Aug., 1888,  
 10&10&10&10  
 Wool.....New list, Aug., 1888,  
 10&10&10&10

**Carpet Stretchers—**

Cast Steel, Polished.....\$ doz \$2.25  
 Cast Iron, Steel Points.....\$ doz \$2.00  
 Socket.....\$ doz \$1.75  
 Bullard's.....25&25&10&

**Carpet Sweepers—**

Bissell No. 5.....\$ doz \$17.00  
 Bissell No. 7 New Drop Pan.....\$ doz \$19.00  
 Bissell, Grand.....\$ doz \$20.00  
 Grand Rapids.....\$ doz \$22.00  
 Crown Jewel, No. 1, \$18.00; No. 3, \$20.00  
 Magic.....\$ doz \$15.00  
 Jewel.....\$ doz \$17.00  
 Improved Parlor Queen, Nickle.....\$ doz \$27.00  
 Improved Parlor Queen, Japanese.....\$ doz \$24.00  
 Excelsior.....\$ doz \$22.00  
 Garland.....\$ doz \$18.00  
 Parlor Queen.....\$ doz \$24.00  
 Housewife's Delight.....\$ doz \$16.00  
 Queen.....\$ doz \$18.00  
 Queen, with band.....\$ doz \$18.00  
 King.....\$ doz \$20.00  
 Weed, Improved.....\$ doz \$16.00  
 Hub.....\$ doz \$16.00  
 Cog-Wheel.....\$ doz \$16.00  
 Conqueror.....\$ doz \$22.00  
 Easy.....\$ doz \$22.00  
 Monarch.....\$ doz \$22.00  
 Goshen.....\$ doz \$22.00  
 Advance.....\$ doz \$22.00  
 Ladies' Friend, No. 1, \$15.00; No. 2, \$16.00  
 American.....\$ doz \$15.00  
 Grand Republic.....\$ doz \$35.00

**Cartridges—**

See Ammunition.

**Casters—**

Best.....New list:  
 Plate.....55&55&55  
 Shallow Socket.....40&10  
 Deep Socket.....40&10  
 Yale Casters, list May, 1888.....30&10&40  
 Yale, Gem.....45&10&50  
 Martin's Patent (Phoenix).....60&60&10  
 Payson's Anti-friction.....10&10&50  
 "Giant" Truck Casters.....45&10  
 Stationary Truck Casters.....45&10

**Cattle Leaders—**

Humason, Beckley & Co.'s.....70  
 Sargent's.....60&10  
 Hotchkiss.....30  
 Peck, Stow & W. Co.....50&10

**Chain—**

Trace, 6 1/2-10-2, exact, \$ pair \$1.03  
 50&10&50&10&50  
 Trace, 6 1/2-10-3, exact, \$ pair \$1.02  
 50&10&50&10&50  
 Trace, 7-10-2, exact, \$ pair \$1.11  
 50&10&50&10&50  
 NOTE.—Traces, "Regular" sizes, 3¢ net  
 Log, Fifth, Stretcher, and other fancy  
 Chains, list Nov. 1, 1888.....50&10&50&10&50

American Coll., 3-16 1/2 5-16 3/4  
 In cask lots.....\$3.75 6.25 5.00 4.50  
 American Coll., 7-16 3/4 4 3/4  
 In cask lots.....\$4.40 4.00 3.75 3.50  
 Less than cask lots, add 1/4¢ per lb.  
 German Coll, list of June 20, 1887.....50&10&50&60

German Halter Chain, list of June 20, 1887.....50&10&50&60  
 Covert Halter, Hitching and Breast.....50&25  
 Covert Traces.....35&25  
 Oneida Halter Chain.....60&60&50  
 Galvanized Pump Chain.....\$ 5 1/2¢ per lb.  
 Jack Chain, Iron.....75&75&50  
 Jack Chain, Brass.....70&70&50

**Chalk—**

White.....\$ gr 50¢  
 Red.....\$ gr 70¢  
 Blue.....\$ gr 85¢  
 White Crayons.....\$ gr 12¢@12 1/2¢, dis 10¢

**Chalk Lines—**

See Lines.

**Chisels—**

Socket Framing and Firmer,  
 P. S. & W.....75&5&75&10  
 New Haven and Middlesex.....75&5&75&10  
 Mix.....75&5&75&10  
 Ohio Tool Co.....75&5&75&10  
 Buck Bros.....30  
 Merrill.....60&10&60&10&50  
 L. & I. J. White.....30&30&50  
 Witherby & Douglas.....75&5&50  
 Tanged and Miscellaneous.  
 Tanged Firmer.....40&10  
 Tanged Firmer, Butcher's.....\$4.75@5.00  
 Tanged Firmer, Spear & Jackson's.....\$ 5 to \$2  
 Tanged Firmer, Buck Bros.....\$ 5 to \$2  
 Cold Chisels.....16@19¢

**Chucks—**

Beach Pat.....each, \$8.00, dis 20¢  
 Morse's Adjustable.....each, \$7.00, dis 20¢  
 Danbury.....ench, \$0.00, dis 30¢@30&50  
 Syracuse, Balz Pat.....25¢

**Clamps—**

Providence Tool Co.'s Wrought Iron.....25¢  
 Adjustable, Gray's.....20¢  
 Adjustable, Lambert's.....20¢  
 Adjustable, Snow's.....40&50  
 Adjustable, Hammers.....15¢  
 Adjustable, Stearns.....20&10  
 Stearn's Adjustable Cabinet and Cor-  
 ner.....20&10  
 Cabinet, Sargent's.....60&2&10  
 Carriage Makers', Sargent's.....70&10  
 Eberhard Mfg. Co.....40&5&40&10  
 Warner's.....40&10&40&10&50  
 Saw Clamps, see Vises.

**Clips—**

Norway, Axle, 1/4 & 5-16.....55&5&55  
 Second grade Norway Axle, 1/4 & 5-16.....65&55  
 Superior Axle Clips.....60&5&60&5&55

Norway Spring Bar Clips, 5-16, 60&5&55  
 Wrought Iron Felloe Clips.....\$ 5¢  
 Steel Felloe Clips.....\$ 5¢  
 Baker Axle Clips.....25¢

**Cockeyes—**

Cocks, Brass.....50¢  
 Hardware list.....40. & 10&25

**Coffee Mills—**

Box and Side, List revised Jan. 1, 1888.....50&25  
 American, Enterprise Mfg. Co. 20&10@30¢  
 The "Swift," Lane Bros.....20&10

**Compasses, Dividers, &c—**

Compasses, Callipers, Dividers, 70¢@70&10  
 Bemis & Call Co.'s Dividers.....60&55  
 Bemis & Call Co.'s Compasses & Call.  
 pers.....50&55  
 Bemis & Call Co.'s Wing & Inside or  
 Outside.....50&55  
 Bemis & Call Co.'s Double.....60¢  
 Bemis & Call Co.'s (Call's Pat. Inside). 30¢  
 Excelsior.....50¢  
 J. Stevens & Co.'s Callipers and Dividers.....25&10  
 Starrett's Spring Callipers and Dividers.....25&10  
 Starrett's Lock Callipers and Dividers.....25&10  
 Starrett's Combination Dividers.....25&10

**Coopers' Tools—**

Bradley's.....20¢  
 Barton's.....20¢@20&55  
 L. & I. J. White.....20&55  
 Albertson Mfg. Co.....25¢  
 Beatty's.....40&40&55  
 Sandusky Tool Co.....30¢@30&55

**Corkscrews—**

Humason & Beckley Mfg. Co. 40¢@40&10  
 Clough's Pat.....33¢@33&55  
 Howe Bros & Hulbert.....35¢

**Cork Knives and Cutters—**

Bradley's.....10¢  
 Wadsworth's.....25¢

**Cradles—**

Grain.....50&25

**Crow Bars—**

Cast Steel.....\$ 4¢  
 Iron, Steel Points.....\$ 3 1/2¢

**Curry Combs—**

Fitch's.....50&10&50&10&10  
 Rubbber.....per doz \$10.00, dis 50¢  
 Perfect.....50¢

**Curtain Pins—**

Silvered Glass.....net  
 White Enamel.....net

**Cutlery—**

Beaver Falls & Booth's.....33¢  
 Wootenholme.....\$7.75 to \$2

**Dampers, &c—**

Dampers, Buffalo.....50¢  
 Buffalo Damper Clips.....50¢  
 Crown Damper.....40¢  
 Excelsior.....40&10

**Dividers—**

See Compasses.

**Dog Collars—**

Embossed, Gift, Pope & Steven's list.....30&10  
 Leather, Pope & Steven's list.....40¢  
 Brass, Pope & Steven's list.....40¢

**Door Springs—**

Torrey's Rod, regular size.....\$ doz \$1.30  
 Gray's.....\$ gr. \$20.00, dis 20¢  
 Bee Rod.....\$ gr. \$20.00, dis 20¢  
 Warner's No. 1, \$ doz, \$2.50; No. 2,  
 \$3.30; dis 40¢@10&50  
 Gem (Coll), list April 19, 1888.....10¢  
 Star (Coll), list April 19, 1888.....20¢  
 Victor (Coll).....60&60&10  
 Champion (Coll).....60&10&60&10&10  
 Philadelphia.....5 in., \$5.00; 8 in., \$7.75;  
 dis 35¢  
 Cowell's.....No. 1, \$ doz, \$18.00; No. 2,  
 \$15.00; dis 50¢  
 Rubber, complete.....\$ doz, \$4.50; dis  
 55&10

**Drawing Knives—**

P. S. & W.....75&5  
 Mix.....75&10  
 New Haven and Middlesex.....75&10  
 Merrill.....60&10&10  
 Witherby and Douglas.....75&75&50  
 Watrous.....15&10&25  
 L. & I. J. White.....20&55  
 Bradley's.....35¢  
 Adjustable Handle.....25¢@35¢  
 Wilkinson's Folding.....25¢@25&55

**Drills and Drill Stocks—**

Blacksmiths'.....each \$1.75  
 Blacksmiths' Self-Feeding.....each \$7.50,  
 dis 20¢  
 Breast, P. S. & W.....40&10  
 Breast, Wilson's.....30&55  
 Breast, Millers Falls.....\$3.00, dis 25¢  
 Breast, Bartholomew's.....each \$2.50, dis  
 25&10&40  
 Ratchet, Merrill's.....20¢@20&55  
 Ratchet, Ingersoll's.....25¢  
 Ratchet, Parker's.....20¢@20&55  
 Ratchet, Whitner's.....20¢  
 Ratchet, Weston's.....20¢@25¢  
 Ratchet, Moore's Triple Action.....25¢@30¢  
 Whitney's Hand Drill, Plain, \$11.00;  
 Adjustable, \$12.00.....dis 20&10  
 Wilson's Drill Stocks.....10¢  
 Automatic Boring Tools.....each \$1.75@  
 \$1.85

**Twist Drills—**

Morse.....50&10&55  
 Standard.....50&10&55  
 Syracuse.....50&10&55  
 Cleveland.....50&10&55  
 Williams.....50&10&55

**Drill Bits.—See Augers and Bits.****Drill Chucks.—See Chucks.****Dripping Pans—**

Small sizes.....\$ 6 3/4¢  
 Large sizes.....\$ 6 3/4¢

**Egg Beaters.**

Dover.....\$ doz \$2.00  
 National.....\$ doz \$4.50, dis 35¢  
 Family (T. & S. Mfg. Co.), \$ gro \$17.00@  
 \$18.00  
 Duplex (Standard Co.).....\$ gro \$15.00  
 Rival (Standard Co.).....\$ gro \$12.00  
 Large Duplex (Standard Co.), \$ doz \$4.50  
 Triumph (T. & S. Mfg. Co.), \$ gro \$10.50@  
 \$11.50

Advance, No. 1.....\$ gro \$10.50  
 Advance, No. 2.....\$ gro \$10.00  
 Bryant's.....\$ gro \$15.00  
 Ayres' Spiral.....\$ gro \$5.00  
 Double (Hamblin & Russell Mfg. Co.), \$  
 gro \$16.20  
 Easy (Hamblin & Russell Mfg. Co.), \$  
 gro \$14.00  
 Triple (Hamblin & Russell Mfg. Co.), \$  
 gro \$16.20  
 Spiral (Hamblin & Russell Mfg. Co.), \$  
 gro \$14.50  
 Paine, Diehl & Co.'s.....\$ gro \$24.00

**Egg Poachers—**

Buffalo Steam Egg Poachers, \$ doz, No. 1,  
 \$6.00; No. 2, \$8.00.....dis 25¢

**Electric Bell Sets—**

Wollensak's.....20¢  
 Bigelow & Dowse.....20¢

**Emery—**

No. 4 to No. 54 to Flour, CF  
 40 gr. 150 gr. F FF.  
 Kegs, \$ 4¢ 5¢ 2 1/2¢  
 1/2 kegs, \$ 4 1/2¢ 5 1/2¢ 2 1/2¢  
 1/4 kegs, \$ 4 1/2¢ 5 1/2¢ 3¢  
 10 lb cans, 10¢ 8 1/2¢ 5¢  
 In case.....d¢ 8 1/2¢ 5¢  
 10 lb cans, less.....10¢ 10¢ 7 1/2¢

**Enameled and Tinned Ware—**

See Hollow-Ware.

**Escutcheon Pins—**

Iron, list Nov. 11, 1885.....50&10&50&10&50  
 Brass.....60&60&50

**Escutcheons.**

Door Lock.....Same dis as Door Locks.  
 Brass Thread.....60¢@60&10  
 Wood.....25¢

**Faucets—**

Fenn's.....40¢  
 Bohren's Pat. Rubber Ball.....25¢  
 Fenn's Cork Stop.....30¢  
 Star.....60¢  
 Frary's Pat. Petroleum.....40&5&25  
 West's Pat. Key.....50&10  
 Anchor Lock.....45¢  
 Metallic Key, Leather Lined.....60&10  
 Cork Lined.....70&5&70&10  
 Burnside's Red Cedar, bbl lots.....60&10  
 John Sommers'.....40¢  
 Peerless Best Block Tin Key.....40¢  
 D. L. 1st quality, Cork Lined.....40¢  
 Diamond Lock.....40¢  
 Perfection, Fla. Red Cedar.....50¢  
 Goodenough Cedar.....50¢  
 Boss Metallic Key.....50¢  
 Reliable Cork Lined.....60¢  
 Western Pattern Cork Lined.....50¢  
 Self-Measuring Enterprise, \$ doz \$50.00,  
 dis 20&10  
 Self-Measuring, Lane's, \$ doz \$36.00,  
 dis 25&10  
 Self-Measuring, Victor, \$ doz \$36.00,  
 dis 25&10

**Felloe Plates—**

Derby and Cincinnati.....45&55

**Fifth Wheels—**

See Files.

**Files—**

Domestic—  
 Nicholson Files, Rasps, &c.....60&5&60&10  
 Nicholson (X. F.) Files.....25¢  
 Nicholson's Royal Files (Seconds)  
 75¢ (extra prices on certain sizes)  
 Other makers, best prices.....60&5&60&10&55  
 Fair brands.....60&10&10&70  
 Second quality.....70&5&75  
 Heller's Horse Rasps.....50&7 1/2¢@50&10  
 McCaffrey's Horse Rasps.....50&10

**Imported—**

J. & Riley Carr.....list, April 1, 1883, 15¢  
 J. & Riley Carr Horse Rasps.....10¢  
 Moss & Gamble.....list, April 1, 1883, 15¢  
 Butcher's list.....20¢  
 Stubbs.....Stubbs list, 25¢@30¢  
 Turton's.....Turton's list, 20¢@25¢  
 Greaves' Horse Rasps.....American list, 60¢

**Fluting Machines—**

Knox, 4 1/2-Inch Rolls.....\$3.25 each } 30¢  
 Knox, 6-Inch Rolls.....\$3.60 each } 35¢  
 Eagle, 3 1/2-Inch Roll.....\$2.15, dis 35¢  
 Eagle, 5 1/2-Inch Roll.....\$2.85, dis 35¢  
 Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in.,  
 \$6.50 each.....dis 35¢  
 Crown Jewel, 6 in.....\$3.50 each, 35¢  
 American, 5 in., \$3.00; 6 in., \$3.40; 7 in.,  
 \$4.50 each.....dis 35¢  
 Domestic Fluter.....\$1.50 each net  
 Gove's Hand Fluter, White Metal.....\$ doz \$12, dis 25¢  
 Crown Hand Fluter, Nos. 1, \$15.00; 2,  
 \$12.50; 3, \$10.00.....dis 30¢  
 Shepard Hand Fluter, No. 85.....\$ doz  
 \$15.30.....dis 40¢  
 Shepard Hand Fluter, No. 110.....\$ doz  
 \$11.00.....dis 40¢  
 Shepard Hand Fluter, No. 95.....\$ doz  
 \$8.00.....dis 40¢  
 Clark's Hand Fluter.....\$ doz \$15.00, dis 35¢  
 Combined Fluter and Sad Iron.....\$ doz  
 \$15.00, dis 30¢  
 Buffalo.....\$ doz \$10.00, dis 10¢

**Fluting Scissors—**

Blair's "Climax".....\$ doz \$2.00  
 Blair's "Climax".....\$ doz \$1.25

**Fodder Squeezers—**

Blair's "Climax".....\$ doz \$2.00  
 Blair's "Climax".....\$ doz \$1.25

**Forks—**

Hay, Manure, &c., Asso. List.....85¢  
 Hay, Manure, &c., Phila. List.....60¢@60&55  
 Plated, see Spoons.

**Freezers, Ice Cream—**

Buffalo Champion.....60&10&55  
 Shepard's Lightning.....65¢  
 White Mountain.....60¢

**Fruit and Jelly Presses—**

Enterprise Mfg. Co.....20&10@30¢  
 Hens.....\$ doz \$3.75@4.00  
 P. D. & Co.....\$ doz \$3.75@4.00  
 Shepard's Queen City.....40¢

**Fry Pans—**

High List.....75&5&75&10  
 No.....0 1 2 3 4  
 \$ doz.....\$3.75 \$4.70 \$5.30 \$5.95 \$6.55  
 No.....5 6 7 8 11  
 \$ doz.....\$7.50 \$8.75 \$10.00 \$11.25  
 Low List.....65&10  
 No.....0 1 2 3 4  
 \$ doz.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25  
 No.....5 6 7 8  
 \$ doz.....\$6.00 \$7.00 \$8.00 \$9.00

**Fuse—**

Common Hemp Fuse, for dry ground, \$2.70  
 Common Cotton Fuse, for dry ground 2.85  
 Single Taped Fuse, for wet ground 4.75  
 Double Taped Fuse, for very wet gr. 6.00  
 Triple Taped Fuse, for very wet gr. 7.25  
 Small Gutta Percha Fuse, for water, 7.50  
 Large Gutta Percha Fuse, for water, 12.00

**Gauges—**

Marking, Mortise, &c.....60&10  
 Starrett's Surface, Center and Scratch,  
 25&10  
 Wire, low list.....10&10  
 Wire, Wheeler, Madden & Co.....10¢  
 Wire, Morse's.....50&50&55  
 Wire, Brown & Sharpe's.....10¢@20¢

**Gimlets—**

Nail and Spike.....50&10&55  
 Eureka's Gimlets.....40&10  
 "Diamond" Gimlets.....\$ gr \$5.00  
 Double Cut, Shepardson's.....45¢@45&55  
 Double Cut, Ives'.....60¢@60&55  
 Double Cut, Douglass'.....40&10  
 "Bee".....\$ gr \$12, dis 25¢@25&55

**Glue—**

Le Page's Liquid.....25¢@25&55  
 Upton's Liquid.....35¢  
 Le Page & Co.'s Improved Process.....25¢@25&55

**Glue Pots—**

Tinned and Enameled.....40¢@40&55  
 Family, Howe's "Eureka".....40¢  
 Family, L. F. C.'s "Handy".....50¢

**Grindstones—**

Small, at factory.....\$ ton \$7.50@9.00

**Grindstone Fixtures—**

Sargent's Patent.....70&10  
 Reading Hardware Co.....30&10

**Hack Saws—**

See Saws.

**Halters—**

Covert's Rope, 1/2-In. Jute.....50&25  
 Covert's Rope, 1/2-In. Hemp.....40&25  
 Covert's Adj. Rope Halters.....40&25  
 Covert's Hemp Rope and Cattle Tie,  
 50&25  
 Covert's Jute Horse and Cattle Tie,  
 60&10&25

**Hammers—**

Handled Hammers—  
 Maydole's, list Dec. 1, '85.....25¢@25&10  
 Buffalo Hammer Co. (list Jan. 15, '87)  
 Humason & Beckley.....50&50&10  
 Atha Tool Co.....50&50&10  
 Fayette R. Plumb.....40&10@50¢  
 C. Hammond & Son.....40&10@50¢  
 correct.....5¢  
 Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &  
 1.75.....dis 30&10  
 Nelson Tool Works.....40&10  
 Warner & Nobles.....30¢@25¢  
 Peck, Stow & Wilcox.....40¢  
 Sargent's.....35¢@35&10

**Heavy Hammers and Sledges—**

3 lb and under.....\$ 40¢ } 60&10  
 3 to 5 lb.....\$ 30¢ } 40¢@70¢  
 Over 5 lb.....\$ 30¢ } \$10 @ 70¢  
 Wilkinson's Smith.....10¢@11¢@12¢

**Handcuffs and Leg Irons—**

Providence Tool Co., Handcuffs, \$15.00  
 \$ doz.....dis 10¢  
 Providence Tool Co., Leg Irons, \$25.00  
 \$ doz.....dis 10¢  
 Tower's.....25¢<



**Cross-Cut Saw Handles—**  
 Atkins' No. 1 Loop, pair, 30¢; No. 3, 22¢; No. 2 and No. 4 Reversible, 22¢.  
 Boynton's Loop Saw Handles, 50¢, dis 60¢.  
 Champion.....15¢

### Hangers—

Barn Door, old patterns.....60¢10¢10¢70¢  
 Barn Door, New England.....60¢10¢10¢70¢  
 Samson Steel Anti-Friction.....55¢  
 Orleans Steel.....55¢  
 Hamilton Wrought Wood Track.....55¢  
 U. S. Wood Track.....65¢  
 Champion.....60¢10¢  
 Rider and Wooster, Medina Mfg. Co.'s  
 List.....70¢  
 Climax Anti-Friction.....70¢  
 Climax Steel Anti-Friction.....50¢  
 Zenith for Wood Track.....55¢  
 Reed's Steel Arm.....50¢  
 Challenge, Barn Door.....50¢  
 Sterling's Improved (Anti-Friction) 65¢10¢  
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....dis 50¢25¢  
 Chertree.....50¢10¢60¢  
 Kiddie's.....50¢10¢60¢  
 The "Boss".....60¢  
 Best Anti-Friction.....60¢  
 Dux (Wood Track).....60¢  
 Terry's Pat., per doz pr. 4 in, \$10.00; 5 in, \$12.00.....dis 50¢55¢  
 Cronk's Pat., No. 4, \$12.00; No. 5, \$14.40; No. 6, \$18.00.....dis 50¢15¢50¢  
 Wood Track Iron Clad, ft. 10¢, dis 50¢  
 15¢60¢  
 Carrier Steel Anti-Friction.....50¢50¢50¢  
 Architect.....set \$6.00, dis 20¢  
 Eclipse.....set \$4.50, dis 20¢  
 Felix.....30¢30¢10¢  
 Richards.....40¢10¢  
 Lane's Steel Anti-Friction.....20¢10¢25¢10¢  
 Ball Bearing Door Hanger.....20¢10¢25¢10¢  
 Warner's Pat.....20¢30¢10¢  
 Stearns' Anti-Friction.....25¢10¢25¢10¢10¢  
 Stearns' Challenge.....25¢10¢25¢10¢10¢  
 Faultless.....40¢40¢55¢  
 American.....set \$6.00, dis 20¢10¢  
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....dis 40¢  
 Paragon, Nos. 1, 2 and 3.....40¢10¢  
 Paragon, Nos. 5, 5½, 7 and 8.....20¢10¢  
 Crescent.....40¢60¢10¢  
 Nickel, Cast Iron.....50¢  
 Nickel, Malleable Iron and Steel.....40¢  
 Scranton Anti-Friction Single Strap.....33¢45¢  
 Scranton Anti-Friction Double Strap.....40¢  
 Universal Anti-Friction.....40¢40¢55¢  
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....dis 45¢  
 Star.....40¢10¢40¢10¢55¢  
 May.....50¢55¢50¢10¢  
 Barry, \$6.00.....dis 40¢10¢

### Harness Snaps—

See Snaps.

### Hatchets—

List Jan. 1, 1886.....35¢40¢  
 Isaiah Blood.....40¢55¢  
 Hunt's Shingling, Lath and Claw.....40¢55¢  
 Hunt's Broad.....40¢  
 Buffalo Hammer Co.....40¢10¢50¢  
 Hurl's.....40¢10¢50¢  
 Fayette H. Plumb.....50¢70¢55¢  
 Wm. Mann, Jr., & Co.....50¢70¢55¢  
 Underhill Edge Tool Co.....40¢55¢10¢10¢  
 Underhill's, Haines and Bright goods.....33¢45¢  
 C. Hammond & Son.....40¢10¢50¢  
 Simmons.....40¢10¢50¢  
 Peck's.....40¢10¢40¢10¢55¢  
 Kelly's.....50¢50¢55¢  
 Sargent & Co.....40¢10¢40¢10¢55¢  
 Ten Eyck Edge Tool Co.....40¢10¢40¢10¢55¢  
 Collins, following list.....10¢  
 Shingling, Nos. 1, 2, 3.....doz \$5.50, \$6.00, \$6.50  
 Claw, Nos. 1, 2, 3.....doz \$6.00, \$6.50, \$7.00  
 Lathing, Nos. 1, 2, 3.....doz \$5.50, \$6.00, \$6.50

### Hay and Straw Knives—

Lighting.....Mfrs' price per doz \$18.00, dis 25¢  
 Jobbers' Extras.....per doz \$17.10, dis 30¢30¢55¢  
 Electric.....per doz \$17.10, dis 30¢30¢55¢  
 Gem.....per doz \$17.10, dis 30¢30¢55¢  
 Wadsworth's.....40¢75¢40¢10¢  
 Carter's Needle.....per doz \$11.50¢\$12.00  
 Heath's.....per doz \$13.50¢\$14.00  
 Auburn Hay, Common and Spear Point.....50¢  
 Auburn, Straw.....40¢

### Hinges—

**Wrought Iron Hinges**  
 Strap and T.....75¢75¢55¢  
 Screw Hook and.....6 to 12 in, 23¢; 14 to 20 in, 34¢; 22 to 36 in, 34¢; 36 to 48 in, 34¢  
 Heavy Welded.....6 to 12 in, 23¢; 14 to 20 in, 34¢; 22 to 36 in, 34¢  
 Screw Hook.....½ in, per doz \$1.50; ¾ in, per doz \$2.45; 1 in, per doz \$3.80  
 Rolled Blind Hinges, Nos. 32 and 34.....50¢10¢  
 Rolled Blind Hinges, Nos. 232 and 234.....55¢10¢  
 Rolled Plate.....70¢10¢  
 Rolled Raised.....70¢10¢  
 Plate Hinges 8, 10 and 12 in, 55¢  
 "Providence" over 12 in, 55¢

### Spring Hinges—

Geer's Spring and Blank Butts.....40¢  
 Union Spring Hinge Co.'s list, March, 1886.....20¢  
 Acme and U. S.....20¢  
 Empire and Crown.....20¢  
 Hero and Monarch.....50¢  
 American, Gem, and Star, Japaned 20¢  
 American, Gem, and Star, Bronzed 20¢  
 Oxford, Bronze and Brass.....net  
 Barker's Double Acting.....20¢10¢  
 Union Mfg. Co.....25¢  
 Bommer's.....30¢  
 Buckman's.....15¢20¢  
 Chicago.....30¢  
 Wiles.....10¢  
 Devore's.....40¢  
 Rex.....40¢

### Gate Hinges—

Western.....per doz \$4.40, dis 60¢  
 N. E.....per doz \$7.00, dis 50¢  
 N. E. Reversible.....per doz \$5.20, dis 55¢10¢  
 Clark's, Nos. 1, 2, 3.....50¢10¢55¢  
 N. Y. State.....per doz \$5.00, dis 55¢10¢  
 Automatic.....per doz \$12.50, dis 50¢

Common Sense.....per doz pair \$4.50, dis 50¢  
 Seymour's.....45¢10¢  
 Shepard's.....60¢10¢55¢  
 Reed's Latch and Hinges.....per doz \$12.00, dis 50¢

### Blind Hinges—

Parker.....75¢25¢  
 Palmer.....50¢55¢10¢  
 Seymour.....70¢25¢  
 Nicholson.....45¢10¢  
 Huffer.....50¢  
 Clark's, Nos. 1, 3, 5, 40 and 50.....75¢10¢55¢80¢  
 Clark's Mortise Gravity.....50¢  
 Sargent's, Nos. 1, 3, 5, 11, 13.....75¢10¢75¢10¢55¢  
 Sargent's, No. 12.....75¢10¢10¢  
 Reading Gravity.....75¢10¢75¢10¢55¢  
 Shepard's Noiseless Niagara Buffalo, Champion, Steamboat, Clark's Old Pattern and Clark's Tip Pattern.....75¢10¢55¢  
 Shepard's O. S., Lull and Porter.....75¢10¢  
 Shepard's Acme, Lull and Porter.....75¢10¢  
 Shepard's Queen City Reversible.....75¢  
 Clark's Lull and Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75¢10¢25¢  
 North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50.....25¢25¢

### Hoes—

**Handled—**  
 Garden, Mortar, &c.....65¢  
 Planter's, Cotton, &c.....65¢  
 Warren Hoe.....60¢  
 Magic.....per doz \$4.00  
**Eye—**  
 D. & H. Scovill.....20¢  
 Lane's Crescent Planter Pattern.....45¢55¢  
 Lane's Razor Blade, Scovill Pattern.....30¢  
 Maynard, S. & O. Pat.....45¢55¢  
 Sandusky Tool Co., S. & O. Pat.....60¢  
 Hubbard & Co., S. & O. Pat.....60¢  
 Chattanooga Tool Co., S. & O. Pat.....60¢  
 Grub.....0¢60¢10¢

**Hog Rings and Ringers—**  
 Hill's Improved Ringers.....per doz \$4.50  
 Hill's Old Style Ringers.....per doz \$3.00  
 Hill's Tones.....per doz \$4.50  
 Hill's Rings.....per doz bxs \$2.25¢\$2.40  
 Perfect Ringers.....per doz bxs \$1.75¢\$2.00  
 Perfect Ringers.....per doz \$2.50  
 Blair's Hog Ringers.....per doz \$2.00¢\$2.25  
 Blair's Hog Ringers.....per doz \$6¢\$1.00  
 Champion Ringers.....per doz \$2.00  
 Champion Rings, Double.....per doz \$2.25  
 Brown's Ringers.....per doz \$2.00  
 Brown's Ringers.....per doz \$1.25¢\$1.30

### Hoisting Apparatus—

"Moore's" Hand Hoist, with Lock "Moore's" Differential Pulley Block.....20¢  
 Energy Mfg. Co.'s.....25¢  
**Holders, File and Tool—**  
 Balz Pat.....per doz \$4.00; dis 25¢  
 Nicholson File Holders.....20¢  
**Hollow-Ware—**  
**Iron—**  
 Stove Hollow-Ware, Ground.....60¢55¢60¢10¢  
 Stove Hollow-Ware, Unground.....60¢10¢60¢10¢  
 Enameled and Tinned Hollow-Ware—  
 Kettles.....65¢10¢  
 Oval Boilers, Saccapans and Glue Pots.....40¢40¢55¢  
 Gray Enameled Ware.....50¢10¢50¢10¢55¢  
 Agate and Granite Ware.....25¢  
 Rustless Hollow-Ware.....50¢50¢55¢  
 Galvanized Tea-Kettles—  
 Inch.....6 7 8 9  
 Each.....55¢ 60¢ 65¢ 75¢  
 Silver Plated—  
 4 mo. or 5¢ cash in 30 days.  
 Reed & Barton.....40¢55¢  
 Meriden Britannia Co.....40¢55¢  
 Simpson, Hall, Miller & Co.....40¢55¢  
 Rogers & Brother.....40¢55¢  
 Hartford Silver Plate Co.....40¢55¢  
 William Rogers Mfg. Co.....40¢55¢

### Knives—

Wilson's Butcher Knives.....25¢30¢  
 Ames' Butcher Knives.....25¢  
 Foster Bros' Butcher, &c.....40¢  
 Nichols' Butcher Knives.....40¢10¢  
 Ames' Shoe Knives.....20¢25¢  
 Ames' Bread Knives.....per doz \$1.50, dis 15¢20¢  
 Moran's Shoe and Bread.....20¢  
 Hay and Straw.....See Hay Knives.  
 Table and Pocket.....See Cutlery.  
 Corn, Auburn Mfg. Co. Western Pat.....\$2.00  
 Corn, Auburn Mfg. Co. Crescent.....\$3.50

### Knobs—

Door Mineral.....65¢68¢  
 Door Por. Jap'd.....75¢78¢  
 Door Por. Nickel.....\$2.00¢\$2.25  
 Door Por. Plated, Nickel.....\$2.00¢\$2.25  
 Drawer, Porcelain.....60¢10¢60¢10¢10¢  
 Hemacite Door Knobs.....40¢10¢50¢  
 Yale & Towne Wood, list Dec. 1885.....40¢  
 Furniture, Plain.....75¢ gro inch, dis 10¢  
 Furniture, Wood Screws.....25¢10¢  
 Base, Rubber Tip.....70¢10¢55¢  
 Picture, Judd's.....60¢10¢10¢70¢  
 Picture, Sargent's.....70¢10¢  
 Picture, Hemacite.....35¢55¢  
 Shutter, Porcelain.....65¢10¢  
 Carriage, Jap.....per gro 80¢, dis 60¢10¢

### Ladles—

Melting, Sargent's.....55¢10¢  
 Melting, Reading.....35¢10¢  
 Melting, Monroe's Pat. per doz \$4.00, dis 40¢  
 Melting, P. S. & W.....35¢10¢40¢  
 Melting, Warner's.....30¢

### Lawn Mowers—

Standard List.....50¢10¢  
 Quaker City.....dis 60¢10¢  
 Enterprise.....60¢10¢

### Lanterns—

**Tubular—**  
 Plain with Guards, per doz.....\$4.00¢\$4.25  
 Lift Wire, with Guards, per doz.....\$4.50¢\$4.75  
 Square Plain, with Guards, per doz.....\$4.00¢\$4.25  
 Sq. Lift Wire, with Guards, per doz.....\$4.25¢\$4.50  
 Without Guards, 25¢ per doz less.  
**Miscellaneous.**  
 Police, Small, \$6.00; Medium, \$7.25; Large, \$9.75.....dis 20¢25¢

### Lemon Squeezers—

Porcelain Lined, No. 1, per doz \$6.00, dis 25¢30¢  
 Wood, No. 2.....per doz \$3.00, dis 35¢  
 Wood, Common.....per doz \$1.70¢\$1.75  
 Dunlap's Improved.....per doz \$3.75, dis 20¢  
 Sammis.....No. 1, \$5.00; No. 2, \$9.12; \$18 per doz.....dis 25¢10¢  
 Jennings' Star.....per doz \$2.50  
 The "Boss".....per doz \$2.50  
 Dean's, Nos. 1, per doz \$6.50; 2, \$3.35; 3, \$2.50  
 Little Giant.....50¢50¢55¢  
 King.....40¢55¢

### Lines—

Cotton and Linen Fish, Draper's.....50¢  
 Draper's Chalk.....60¢  
 Draper's Masons' Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....dis 25¢  
 Cotton Chalk.....55¢  
 Samson, Cotton, No. 4, \$2; No. 4½, \$2.50; No. 5, \$3.00; No. 6, \$3.50; No. 7, \$4.00; No. 8, \$4.50; No. 9, \$5.00; No. 10, \$5.50; No. 11, \$6.00; No. 12, \$6.50; No. 13, \$7.00; No. 14, \$7.50; No. 15, \$8.00; No. 16, \$8.50; No. 17, \$9.00; No. 18, \$9.50; No. 19, \$10.00; No. 20, \$10.50; No. 21, \$11.00; No. 22, \$11.50; No. 23, \$12.00; No. 24, \$12.50; No. 25, \$13.00; No. 26, \$13.50; No. 27, \$14.00; No. 28, \$14.50; No. 29, \$15.00; No. 30, \$15.50; No. 31, \$16.00; No. 32, \$16.50; No. 33, \$17.00; No. 34, \$17.50; No. 35, \$18.00; No. 36, \$18.50; No. 37, \$19.00; No. 38, \$19.50; No. 39, \$20.00; No. 40, \$20.50; No. 41, \$21.00; No. 42, \$21.50; No. 43, \$22.00; No. 44, \$22.50; No. 45, \$23.00; No. 46, \$23.50; No. 47, \$24.00; No. 48, \$24.50; No. 49, \$25.00; No. 50, \$25.50; No. 51, \$26.00; No. 52, \$26.50; No. 53, \$27.00; No. 54, \$27.50; No. 55, \$28.00; No. 56, \$28.50; No. 57, \$29.00; No. 58, \$29.50; No. 59, \$30.00; No. 60, \$30.50; No. 61, \$31.00; No. 62, \$31.50; No. 63, \$32.00; No. 64, \$32.50; No. 65, \$33.00; No. 66, \$33.50; No. 67, \$34.00; No. 68, \$34.50; No. 69, \$35.00; No. 70, \$35.50; No. 71, \$36.00; No. 72, \$36.50; No. 73, \$37.00; No. 74, \$37.50; No. 75, \$38.00; No. 76, \$38.50; No. 77, \$39.00; No. 78, \$39.50; No. 79, \$40.00; No. 80, \$40.50; No. 81, \$41.00; No. 82, \$41.50; No. 83, \$42.00; No. 84, \$42.50; No. 85, \$43.00; No. 86, \$43.50; No. 87, \$44.00; No. 88, \$44.50; No. 89, \$45.00; No. 90, \$45.50; No. 91, \$46.00; No. 92, \$46.50; No. 93, \$47.00; No. 94, \$47.50; No. 95, \$48.00; No. 96, \$48.50; No. 97, \$49.00; No. 98, \$49.50; No. 99, \$50.00; No. 100, \$50.50; No. 101, \$51.00; No. 102, \$51.50; No. 103, \$52.00; No. 104, \$52.50; No. 105, \$53.00; No. 106, \$53.50; No. 107, \$54.00; No. 108, \$54.50; No. 109, \$55.00; No. 110, \$55.50; No. 111, \$56.00; No. 112, \$56.50; No. 113, \$57.00; No. 114, \$57.50; No. 115, \$58.00; No. 116, \$58.50; No. 117, \$59.00; No. 118, \$59.50; No. 119, \$60.00; No. 120, \$60.50; No. 121, \$61.00; No. 122, \$61.50; No. 123, \$62.00; No. 124, \$62.50; No. 125, \$63.00; No. 126, \$63.50; No. 127, \$64.00; No. 128, \$64.50; No. 129, \$65.00; No. 130, \$65.50; No. 131, \$66.00; No. 132, \$66.50; No. 133, \$67.00; No. 134, \$67.50; No. 135, \$68.00; No. 136, \$68.50; No. 137, \$69.00; No. 138, \$69.50; No. 139, \$70.00; No. 140, \$70.50; No. 141, \$71.00; No. 142, \$71.50; No. 143, \$72.00; No. 144, \$72.50; No. 145, \$73.00; No. 146, \$73.50; No. 147, \$74.00; No. 148, \$74.50; No. 149, \$75.00; No. 150, \$75.50; No. 151, \$76.00; No. 152, \$76.50; No. 153, \$77.00; No. 154, \$77.50; No. 155, \$78.00; No. 156, \$78.50; No. 157, \$79.00; No. 158, \$79.50; No. 159, \$80.00; No. 160, \$80.50; No. 161, \$81.00; No. 162, \$81.50; No. 163, \$82.00; No. 164, \$82.50; No. 165, \$83.00; No. 166, \$83.50; No. 167, \$84.00; No. 168, \$84.50; No. 169, \$85.00; No. 170, \$85.50; No. 171, \$86.00; No. 172, \$86.50; No. 173, \$87.00; No. 174, \$87.50; No. 175, \$88.00; No. 176, \$88.50; No. 177, \$89.00; No. 178, \$89.50; No. 179, \$90.00; No. 180, \$90.50; No. 181, \$91.00; No. 182, \$91.50; No. 183, \$92.00; No. 184, \$92.50; No. 185, \$93.00; No. 186, \$93.50; No. 187, \$94.00; No. 188, \$94.50; No. 189, \$95.00; No. 190, \$95.50; No. 191, \$96.00; No. 192, \$96.50; No. 193, \$97.00; No. 194, \$97.50; No. 195, \$98.00; No. 196, \$98.50; No. 197, \$99.00; No. 198, \$99.50; No. 199, \$100.00; No. 200, \$100.50; No. 201, \$101.00; No. 202, \$101.50; No. 203, \$102.00; No. 204, \$102.50; No. 205, \$103.00; No. 206, \$103.50; No. 207, \$104.00; No. 208, \$104.50; No. 209, \$105.00; No. 210, \$105.50; No. 211, \$106.00; No. 212, \$106.50; No. 213, \$107.00; No. 214, \$107.50; No. 215, \$108.00; No. 216, \$108.50; No. 217, \$109.00; No. 218, \$109.50; No. 219, \$110.00; No. 220, \$110.50; No. 221, \$111.00; No. 222, \$111.50; No. 223, \$112.00; No. 224, \$112.50; No. 225, \$113.00; No. 226, \$113.50; No. 227, \$114.00; No. 228, \$114.50; No. 229, \$115.00; No. 230, \$115.50; No. 231, \$116.00; No. 232, \$116.50; No. 233, \$117.00; No. 234, \$117.50; No. 235, \$118.00; No. 236, \$118.50; No. 237, \$119.00; No. 238, \$119.50; No. 239, \$120.00; No. 240, \$120.50; No. 241, \$121.00; No. 242, \$121.50; No. 243, \$122.00; No. 244, \$122.50; No. 245, \$123.00; No. 246, \$123.50; No. 247, \$124.00; No. 248, \$124.50; No. 249, \$125.00; No. 250, \$125.50; No. 251, \$126.00; No. 252, \$126.50; No. 253, \$127.00; No. 254, \$127.50; No. 255, \$128.00; No. 256, \$128.50; No. 257, \$129.00; No. 258, \$129.50; No. 259, \$130.00; No. 260, \$130.50; No. 261, \$131.00; No. 262, \$131.50; No. 263, \$132.00; No. 264, \$132.50; No. 265, \$133.00; No. 266, \$133.50; No. 267, \$134.00; No. 268, \$134.50; No. 269, \$135.00; No. 270, \$135.50; No. 271, \$136.00; No. 272, \$136.50; No. 273, \$137.00; No. 274, \$137.50; No. 275, \$138.00; No. 276, \$138.50; No. 277, \$139.00; No. 278, \$139.50; No. 279, \$140.00; No. 280, \$140.50; No. 281, \$141.00; No. 282, \$141.50; No. 283, \$142.00; 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No. 390, \$195.50; No. 391, \$196.00; No. 392, \$196.50; No. 393, \$197.00; No. 394, \$197.50; No. 395, \$198.00; No. 396, \$198.50; No. 397, \$199.00; No. 398, \$199.50; No. 399, \$200.00; No. 400, \$200.50; No. 401, \$201.00; No. 402, \$201.50; No. 403, \$202.00; No. 404, \$202.50; No. 405, \$203.00; No. 406, \$203.50; No. 407, \$204.00; No. 408, \$204.50; No. 409, \$205.00; No. 410, \$205.50; No. 411, \$206.00

**Molasses Gates—**

Stebbin's Pat.	70¢@70¢7½¢
Stebbin's Genuine	80¢@10¢10¢
Stebbin's Tinned Ends	40¢@10¢
Chase's Hard Metal	50¢@10¢
Bush's	20¢
Lincoln's Pattern	70¢@70¢10
Wood's	20¢@10¢

Boss, # doz:

Nos. 1, 87; No. 2, 88; No. 3, 89; No. 4, 90.

10¢, 60¢@10¢10¢

**Money Drawers—** # doz, \$18¢@20**Muzzles—**

Safety # doz, \$3.00 dis 25 %

**Nails, see: Trade Report.**

Wire Nails &amp; Brads, list July 14, '87

Wire Nails, Standard Penny, # keg

82.50¢@82.60

**Nail Puller—**

Curtiss Hammer # doz \$9, net

Grant, No. 1, # doz, \$30.00, 10¢

Pelican # doz, \$9.00, dis 25%

Boss # doz, \$30.00, dis 30%

Lightning # doz \$21.00

**Nail Sets—**

Square # gr, \$4.00@4.25

Round # gr, \$3.25

Cannon's Diamond Point # gr, \$12, 20%

**Nut Crackers—**

Table (H. &amp; B. Mfg. Co.) 40%

Blake's Pattern # doz \$2.00, dis 10%

Turner &amp; Seymour Mfg. Co. 50%

**Nuts—**

Nuts, off list Jan. 1, 1888: Square, Hex,

Hot Pressed 5.4¢ 5.4¢

Cold Punched 5.4¢ 5.4¢

In less than 10¢, # doz, add 1¢; 1-b

boxes, add 1¢ to list.

**Oakum—**

Government # b 7½¢ @ 8¢

U. S. Navy # b 6¼¢ @ 7¢

Navy # b 5½¢ @ 6¼¢

**Oilers—**

Zinc and Tin 65¢@65¢10¢

Brass and Copper 50¢@10¢50¢10¢5

Malleable, Hammers Improved, No. 1,

\$3.00; No. 2, \$4.00; No. 3, \$4.40 # doz,

dis 10¢@10¢10¢

Malleable, Hammers, Old Pattern, same

list 40%

Prior's Pat. or "Paragon" Zinc

60¢@10¢10¢

Prior's Pat. or "Paragon" Brass 50%

Olmstead's Tin and Zinc 50%

Olmstead's Brass and Copper 50%

Broughton's Zinc 60%

Broughton's Brass 50%

**Packing, Steam—**

Standard 60¢@10¢60¢10¢10¢

Extra 50¢@10¢60¢

N. Y. B. &amp; P. Co., standard 50¢@10¢5

N. Y. B. &amp; P. Co., Empire 70%

N. Y. B. &amp; P. Co., Salamander

# b 65¢, dis 30%

Jenkins' Standard # b 80¢, dis 35%

**Miscellaneous—**

American Packing 10¢@11¢ # b

Russia Packing 14¢ # b

Italian Packing 13¢@14¢ # b

Cotton Packing 15¢@17¢ # b

Jute 7¢@8¢ # b

**Padlocks—****See Locks.****Nails—****Galvanized Iron—**

Quarts 10 12 14

Hill's Light Weight # doz, \$2.75 3.00 3.25

Hill's Heavy Weight # dz, 3.00 3.25 3.75

Whiting's 2.75 3.00 3.25

Sidney Shepherd &amp; Co. 2.80 3.00 3.40

Iron Clad 2.75 3.00 3.25

Fire Buckets 2.75 3.25 3.50

Buckets, see Well Buckets.

**Indurated Fibre Ware—**

Star Pails, 12 qt # doz \$4.50

Fire, Stable and Milk, 14 qt # doz \$5.50

**Pencils—**

Faber's Carpenters' high list 50¢

Faber's Round Gilt # gro \$5.25 net

Dixon's Lead # gro \$4.50 net

Dixon's Lumber # gro \$6.75 net

Dixon's Carpenters' 40¢@10¢

**Picks—**

Railroad or Adze Eye, 5 to 6, \$12.00; 6

to 7, \$13.00 # dis 60¢@50¢@10¢

**Picture Nails—**

Brass Head, Sargent's list 50¢@10¢10¢

Brass Head, Combination list 50¢@10¢

Porcelain Head, Sargent's list 50¢@10¢10¢

Porcelain Head, Combination list 40¢@10¢

Niles' Patent 40%

Pinking Irons # doz 65¢ net

Pipe, Wrought Iron—

List March 23, 1887.

1½ and under, Plain 55%

1½ and under, Galvanized 47%

1½ and over, Plain 65%

1½ and over, Galvanized 55%

Boiler Tubes, Iron 60%

Planes and Plane Irons—

Wood Planes—

Molding 50¢@50¢10¢

Bench, First Quality 50¢@10¢60¢

Bench, Second Quality 30¢@10¢60¢10¢5

Bailey's (Stanley R. &amp; L. Co.) 40¢@10¢

Iron Planes—

Bailey's (Stanley R. &amp; L. Co.) 40¢@10¢

Miscellaneous Planes (Stanley R. &amp; L. Co.) 20¢@10¢

Victor Planes (Stanley R. &amp; L. Co.) 20¢@10¢

Steele's Iron Planes 35¢@35¢10¢

Meriden Mfg. Iron Co. 30¢@10¢30¢10¢10¢

Davis's Iron Planes 30¢@10¢30¢10¢10¢

Birmingham Plane Co. 50¢@50¢5

Gage Tool Co.'s Self-Setting 20¢@10¢

Chaplin's Iron Planes 40¢@40¢5

Sargent's 30¢@10¢30¢10¢10¢

**Plane Irons—**

Plane Irons	20¢@10¢
Plane Irons, Butcher's	\$5.00@5.25 to 6
Plane Irons, Buck Bros	90%
Plane Irons, Auburn Tool Co., "This-	40%
tle"	
Sandusky Tool Co.	30%
Single and Cut	40%
Double	40%
L. & I. J. White	25%

**Pliers and Nippers—**

Button's Patent	30¢@10¢40%
Hall's No. 2, 5 in.	\$13.50; No. 4, 7 in.
\$21.00 # doz	dis 20¢@10¢33½¢
Humason & Beckley Mfg. Co.	50¢@50¢10¢
Gas Pliers	60%
Gas Pliers, Custer's Nickel Plated	60¢55
Eureka Pliers and Nippers	25%
Russell's Parallel	25%
P. S. & W. Cast Steel	50%
P. S. & W. Tinnars' Cutting Nippers	add 6¢ dis 10%
Carew's Pat. Wire Cutters	30%
Morrill's Parallel # doz, \$12.00	30¢55
Cronk's 8 in.	\$15.00; 10 in. \$21.00
40¢@40¢5	

**Plumbs and Levels—**

Regular List	70¢@10¢70¢10¢10%
Diston's	45¢10%
Pocket Levels, 70¢@10¢10%	
Davis Iron Levels	30%
Davis' Inclometers	10¢@10%

**Poppers, Corn—**

Round or Square, 1 qt. # gr \$12.00@15.00

Round or Square, 2 qt. # gr \$25.00@26.00

**Post Hole and Tree Augers and Diggers—**

Samson Post Hole Digger # doz \$36.00,

dis 25¢@10%

Fletcher Post Hole Augers # doz \$36.00,

dis 20%

Eureka Diggers # doz \$16.00@17.00

Leed's # doz \$8.00@9.00

Vaughan's Post Hole Auger # doz

\$13.00@14.00

Kohler's Little Giant # doz \$18.00

Kohler's Hercules # doz \$15.00

Kohler's New Champion # doz \$9.00

Schneider # doz \$18.00

Ryan's Post Hole Diggers # doz \$24.00

Cronk's Post Bars # doz \$24.00

dis 50¢@50¢10%

Gibb's Post Hole Digger # doz \$30.00,

dis 40¢@40¢10%

**Potato Parers—**

White Mountain # doz \$5.00@5.50

Antrim Combination # doz \$13.50

Hoosier # doz \$13.50

**Pruning Hooks and Shears—**

Diston's Combined Pruning Hook and

Saw # doz \$18.00, dis 20¢@10%

Diston's Pruning Hook # doz \$12.00,

dis 20¢@10%

E. S. Lee &amp; Co.'s Pruning Tools 40%

Pruning Shears, Henry's Pat. # doz

\$3.75@4.00 net

Henry's Pruning Shears # doz \$4.50 net

Wheeler, Co.'s Combination # doz \$12.00,

dis 20%

Dunlap's Saw and Chisel # doz \$8.50,

dis 30%

J. Mallinson &amp; Co., No. 1, \$5.25; No. 2, 7.25

**Pulleys—**

Hot House, Awning, &amp;c. 60¢@10%

Japanned Screw 60¢@10%

Brass Screw 60¢@10%

Japanned Slide 60¢@10%

Japanned Clothes Line 60¢@10%

Empire Sash Pulley 55¢@60%

Moore's Sash, Anti-Friction 60%

Hay Fork, Solid Eye, \$4.00, Swivel

\$1.50, dis 50¢@10¢50¢10¢5

Hay Fork, "Anti-Friction" 5 in. Solid,

\$5.70, dis 50%

Hay Fork, "F" Common and Pat.

Bush 20%

Hay Fork, Tarbox Pat. Iron 30%

Hay Fork, Reed's Self-Lubricating 60%

Shade Rack 45%

Tackle Blocks—See Blocks

**Pumps—**

Cistern, Best Makers 50¢@10¢60%

Pitcher Spout, Best Makers 60¢@10¢60

Pitcher Spout, Cheaper Goods 70¢@10¢5

**Punches—**

Saddlers' or Drive, good quality, # doz

60¢@50%

Bemis &amp; Call Co.'s Cast Steel Drive 50¢55

Bemis &amp; Call Co.'s Springfield Socket 50¢55

Spring, good quality # doz \$2.50@2.60

Spring, Leach's Pat. 15%

Bemis &amp; Call Co.'s Spring and Check 40%

Solid Timers' # doz \$1.44, dis 55%

Timers' Hollow Punches 30¢25

Rice Hand Punches 15%

Avery's Revolving 30¢@10%

Avery's Saw-Set and Punch. See Saw Sets.

**Rail—**

Sliding Door, Wrt't Brass, # b 35¢, dis 15%

Sliding Door, Bronzed Wrt't Iron # ft. 7¢

Sliding Door, Iron, Painted # foot 4¢

dis 20¢@10¢5

Barn Door, Light In. ¼ ¾ ¾

Per 100 feet \$2.50 3.00 4.40, dis 10%

B. D. for N. E. Hangers

Small Med. Large

Per 100 feet \$2.15 2.70 3.25, net

Terry's Wrought Iron # foot 4¢@5¢

Victor Track Rail, 7¢ # foot 5¢@2¢

Carrier Steel Rail # foot 4¢@5¢

Rakes—

Cast Steel, Association goods 65%

Cast Steel, outside goods 70%

Malleable 70¢@70¢5

Gibbs Lawn Rake \$12.00, dis 50%

Canton Lawn Rake \$9.00, dis 50%

Ft. Madison Prize Bow Brace and Peer-

less 65%

Fort Madison Steel Tooth Lawn Rake,

\$9.00, dis 25%

Razors—

J. B. Torrey Razor Co. 20%

Wostenholme and Butcher, \$10.00 to 2,

dis 10%

**Razor Stroaps—**

Genuine Emerson	60¢@60¢5
Imitation # doz \$2.00, dis 20¢@10¢5	
Torrey's	20%
Badger's Belt and Com	\$2.00
Lamont Combination	# doz \$4.00

**Rivets and Burrs—**

Copper 50¢@50¢10%

Iron, list Nov. 17, '87 50%

**Rivet Sets—**

dis 50¢@2¢50¢10%

**Rods—**

Stair, Brass 25¢@2¢

Stair, Black Walnut # doz 40¢

**Rollers—**

Barn Door, Sargent's list 60¢@10¢10%

Acme (Anti-Friction) 55%

Union Barn Door Roller 70%

**Rope—**

Manufacturers' prices for large lots:

Manila, ½ in. and larger # b 15¢

Manila, ¾ in. # b 15¢

Manila, 1 in. and 1½ in. # b 15¢

Manila Tarred Rope # b 14¢

Manila Hay Rope # b 15¢

Sisal, ½ inch and larger # b 13¢

Sisal, ¾ in. # b 13¢

Sisal, 1 in. and 1½ in. # b 13¢

Sisal, Hay Rope # b 13¢

Sisal, Tarred Rope # b 12¢

Sisal, Medium Lathe Yarn # b 12¢

Cotton Rope # b 15¢@18¢ net

Jute Rope # b 7¢

**Rules—**

Boxwood 80¢@10¢80¢10¢10%

Ivory 50¢@50¢10%

Starrett's Rules and Straight Edges,



<b>Machine—</b>	
Flat Head, Iron.....	55¢
Round Head, Iron.....	50¢
<b>Bench and Hand—</b>	
Bench, Iron.....	55¢10¢55¢10¢10¢
Bench, Wood, Beech.....	20¢
Bench, Wood, Hickory.....	20¢
Hand, Wood.....	25¢10¢25¢10¢5¢
Lag, Blunt Point.....	75¢75¢10¢
Coach and Lag, Gimlet Point.....	75¢
Bed.....	25¢5¢
Hand Rail, Sargent's.....	60¢5¢10¢
Hand Rail, H. & B. Mfg. Co.....	70¢10¢75¢
Hand Rail, Am. Screw Co.....	75¢
Jack Screws, Millers Falls list.....	50¢50¢5¢
Jack Screws, P. S. & W.....	35¢
Jack Screws, Sargent.....	60¢10¢60¢10¢5¢
Jack Screws, Stearns.....	40¢10¢10¢
<b>Scroll Saws—</b>	
Lester, complete, \$10.00.....	25¢
Rogers, complete, \$4.00.....	25¢
Barnes' Builders' and Cabinet Makers'.....	15¢
Barnes' Scroll Saw Blades.....	30¢
<b>Scythe Snaths.....</b>	
50¢25¢	
<b>Shears—</b>	
American (Cast) Iron.....	75¢10¢75¢10¢5¢
Pruning, See Pruning Hooks and Shears	
Barnard's Lamp Trimmers.....	¢ doz \$3.75
Tinners'.....	20¢25¢
Seymour's, List, Dec., 1881.....	60¢10¢60¢10¢10¢5¢
Heinrich's, List, Dec., 1881.....	60¢10¢60¢10¢10¢5¢
Heinrich's Tailor's Shears.....	33¢35¢
First quality C. S. Trimmers.....	80¢80¢10¢
Second quality C. S. Trimmers.....	80¢10¢80¢10¢10¢
Acme Cast Shears.....	10¢10¢
Diamond Cast Shears.....	10¢10¢
Clippers.....	10¢10¢
Victor Cast Shears.....	75¢10¢75¢10¢5¢
Howe Bros. & Hulbert, Solid Forged.....	40¢
Chicago Drop Forge & F. Co., Solid.....	70¢
Steel Forged.....	70¢
Clausen Shear Co., Japanned.....	60¢
Clausen Shear Co., Nickeled, same list.....	60¢
<b>Sheaves—</b>	
Sliding Door.....	N. W. & Co., list July, 1888, 50¢10¢60¢10¢
R. & E., list Dec. 18, 1885.....	55¢20¢
Corbin's list.....	60¢10¢25¢
Patent Roller.....	60¢10¢25¢
Patent Roller, Hatfield's.....	75¢
Russell's Anti-Friction, list Dec. 18, 1885.....	60¢25¢
Moore's Anti-Friction.....	60¢
Sliding Shutter.....	R. & E. list Dec. 18, 1885, 60¢10¢25¢
Sargent's list.....	60¢10¢
Reading list.....	60¢10¢10¢
<b>Ship Tools—</b>	
L. & J. White.....	20¢5¢
Alberson Mfg. Co.....	25¢
<b>Shoes, Horse, Mule, &amp;c.—</b>	
Horse.....	Burden's, Perkins', Phoenix, at factory, \$1.00
Mule.....	Add \$1 ¢ keg to above prices.
Oz, Wrought.....	Ton lots..... ¢ 9¢
1000 lb lots.....	¢ 9¢
500 lb lots.....	¢ 10¢
<b>Shot—</b>	
(Eastern prices 2¢ off, cash, 5 days.)	
Drop, ¢ bag, 25 lb.....	\$1.20
Drop, ¢ bag, 5 lb.....	.29
Bucks and Chilled, ¢ 25 lb bag.....	1.45
Buck and Chilled, ¢ 5 lb bag.....	.34
<b>Shovels and Spades—</b>	
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....	20¢
Norrie-Jobbers frequently give 5¢7½¢ extra on above.	
Griffith's Black Iron.....	50¢10¢
Griffith's C. S.....	60¢60¢10¢
Griffith's Solid C. S. R. R. Goods.....	20¢
Old Colony (Sanford Fork & Tool Co.) 20¢	
St. Louis Shovel Co.....	20¢20¢7½¢
Hussey, Binns & Co.....	15¢25¢
Hubbard & Co.....	20¢20¢7½¢
Lehigh Mfg. Co.....	50¢10¢
Payne Pettibone & Son, list January, 1886.....	30¢
Remington's (Lowman's Patent).....	30¢10¢40¢
Rowland's, Black Iron.....	50¢10¢
Rowland's Steel.....	60¢5¢60¢10¢
<b>Shovels and Tongs—</b>	
Iron Head.....	60¢10¢60¢10¢5¢
Brass Head.....	60¢10¢10¢
<b>Skins, Thimble—</b>	
Western list.....	75¢5¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887.....	20¢
Doublebrookdale Iron Co.....	50¢10¢
Utica P. S. T. Skins.....	60¢
U. S. Turned and Fitted.....	35¢
<b>Sieves—</b>	
Buffalo Metallic, S. S. & Co.....	50¢25¢10¢
Barler Flour Sifters.....	¢ doz \$2.00
Smith's Adjustable Sifters.....	¢ doz \$2.25
Smith's Adjustable Milk Strainer.....	¢ doz \$2.00
Smith's Adjustable F. & C. Strainer.....	¢ doz \$1.75
<b>Sieves, Wooden Rim—</b>	
Iron. Plated.	
10¢ 18, Nested, ¢ doz.....	70¢
10¢ 20, Nested, ¢ doz.....	85¢
10¢ 24, Nested, ¢ doz.....	\$1.00
<b>Slates—</b>	
School, by case.....	50¢10¢
<b>Snaps, Harness, &amp;c.—</b>	
Anchor (T. & S. Mfg. Co.).....	65¢
Fitch's (Bristol).....	50¢10¢
Hotchkiss.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
Ger's 10, new list.....	40¢10¢
Covert, New Patent.....	50¢5¢25¢
Covert, New B. E.....	60¢25¢
Covered Spring.....	60¢10¢10¢
<b>Soldering Irons—</b>	
Covert's Adjustable, list Jan. 1, 1886.....	35¢25¢
<b>Spoke Shaves—</b>	
Iron.....	45¢
Wood.....	30¢
Bailey's (Stanley R. & L. Co.).....	40¢10¢
Stearns.....	20¢10¢30¢
<b>Spoke Trimmers—</b>	
Bonney's.....	¢ doz \$10.00, dis 50¢
Stearns.....	20¢10¢
Ives' No. 1, \$15.00; No. 2, \$12.00.....	55¢10¢
Douglas.....	¢ doz \$9.00, dis 20¢
<b>Spoons and Forks—</b>	
Tinned Iron—	
Basting, Cen. Stamp, Co.'s list.....	70¢10¢
Solid Table and Tea, Cen. Stamp, Co.'s list.....	70¢10¢
Buffalo S. S. & Co.....	33¢25¢
Silver-Plated—(4 mos. or 5¢ cash 30 days)	
Meriden Brit. Co., Rogers.....	50¢
C. Rogers & Bro.....	50¢
Rogers & Bro.....	50¢
Reed & Barton.....	50¢
Wm. Rogers Mfg. Co.....	50¢10¢60¢
Simpson, Hall, Miller & Co.....	50¢10¢
Holmes & Edwards Silver Co.....	50¢10¢5¢
H. & E. Silver Co., Mexican Silver.....	50¢5¢
H. & E. Silver Co., Durham Silver.....	50¢5¢
German Silver.....	50¢50¢5¢
German Silver, Hall & Elton.....	50¢5¢ cash
Nickel Silver.....	50¢5¢50¢10¢5¢ cash
Britannia.....	50¢10¢
Boardman's Flat Ware.....	50¢10¢
Boardman's Nickel Silver.....	50¢
Boardman's Britannia Spoons, case.....	60¢
<b>Springs—</b>	
Elliptic, Concord, Platform and Half.....	60¢60¢5¢
Chicago Drop Forge & F. Co., Solid.....	60¢60¢5¢
Chf's Bolster Springs.....	25¢
<b>Squares—</b>	
Steel and Iron.....	75¢10¢80¢
Nickel-Plated.....	60¢10¢10¢70¢
Try Square and T Bevels.....	45¢10¢
Piston's Try Square and T Bevels.....	45¢10¢
Winterbottom's Try and Miter.....	30¢10¢
Starrett's Micrometer Caliper Squares.....	25¢
Avery's Flush Bevel Squares.....	30¢5¢
<b>Staples—</b>	
Fence Staples, Galvanized.....	Same price
Fence Staples, Plain.....	As B'rd Wire.
Fence Tril. Rep.....	See Tril. Rep.
<b>Steel Yards.....</b>	
40¢10¢50¢	
<b>Stocks and Dies—</b>	
Blacksmith's Waterford Goods.....	30¢
Blacksmith's Butterfield's Goods.....	60¢30¢10¢
Lightning Screw Plate.....	25¢30¢10¢
Reece's New Screw Plates.....	33¢25¢40¢
<b>Stone—</b>	
Hindustan No. 1, 3¢; Axe, 3½¢; Slips.....	No. 1, 4½¢
Sand Stone.....	¢ 2½¢
Washita Stone, Extra.....	¢ 19¢20¢
Washita Stone, No. 1.....	¢ 14¢15¢
Washita Stone, No. 2.....	¢ 10¢11¢
Washita Slips, No. 1, Extra.....	¢ 36¢38¢
Washita Slips, No. 1.....	¢ 24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....	¢ 15¢
Arkansas Stone, No. 1, 6 to 9 in.....	¢ 18¢
Turkey Oil Stone, 4 to 8 in.....	¢ 40¢
Turkey Slips.....	¢ 10¢10¢1.50
Lake Superior Chase.....	¢ 16¢
Seneca Stone, Small Whets.....	¢ 31¢32¢
Seneca Stone, Red Paper Brand.....	18¢20¢
Seneca Stone, High Rounds.....	¢ 20¢25¢
Seneca Stone, Small Whets.....	¢ 24¢40¢
<b>Stove Polish—</b>	
Joseph Dixon s.....	¢ gro \$6.00, dis 10¢
Gem.....	¢ gro \$4.50, dis 10¢
Gold Medal.....	¢ gro \$6.00, dis 25¢
"Mirror".....	¢ pro \$9.00, dis —
Lustro.....	¢ gro \$4.75 net
Ruby.....	¢ gro \$3.75 net
Rising Sun, 5 gro lots.....	¢ gro \$5.50
Dixon's Plumbago.....	¢ 8¢ net
Boynton's Noon Day.....	¢ gro \$5.00
Major Eric's Stove Enamel.....	¢ \$13.00
Yates' Liquid.....	2 3 5 10 gal. cans
Yates Standard Paste Polish, 10 lb cans.....	¢ 80.00 40 70 00
Jet Black.....	¢ gro \$3.50
Japanese.....	¢ gro \$3.50
Presideo.....	¢ gro \$2.50
Diamond O. K. Enamel.....	¢ gro \$19.00
Bonnell's Liquid Stove Polish.....	¢ gro \$9.00
Bonnell's Paste Stove Polish.....	¢ gro \$6.00
Black Eagle Benzine Paste, 5 and 10 lb cans.....	12½¢
Black Jack Water Paste, 5 and 10 lb cans.....	12½¢
Nickel Plate Paste.....	¢ gro \$6.00
<b>Tacks, Brads, &amp;c.—</b>	
List, Jan. 2, 1888.—(Note.—Some manufacturers are selling Tacks at slightly higher prices than those named.)	
American Iron Carpet.....	80¢80¢5¢
Steel Carpet.....	80¢80¢5¢
Swedes Iron Carpet.....	80¢80¢5¢
American Iron Cut.....	75¢75¢10¢
Swedes Iron.....	75¢5¢75¢10¢
Swedes Iron, Upholsters.....	75¢10¢75¢10¢5¢
Tinned Swedes Iron.....	75¢10¢75¢10¢5¢
Tinned Swedes Iron, Upholsters.....	75¢10¢75¢10¢5¢
Gimp and Lace.....	75¢10¢75¢10¢5¢
Tinned Gimp and Lace.....	75¢10¢75¢10¢5¢
Swedes Iron Trimmers.....	75¢10¢75¢10¢5¢
Swedes Iron Miners'.....	75¢10¢75¢10¢5¢
Swedes Iron Bill Posters' or Railroad.....	75¢10¢75¢10¢5¢
Swedes Steel (Swedes Iron price list).....	80¢80¢5¢
Copper Tacks.....	50¢10¢
Copper Finishing, Trunk and Clout Nails.....	50¢10¢
Finishing Nails.....	70¢10¢70¢10¢10¢
Trunk and Clout Nails.....	70¢10¢70¢10¢10¢
Tinned Trunk and Clout Nails.....	70¢10¢10¢
Basket Nails.....	70¢10¢70¢10¢10¢
<b>Common and Patent Brads, 70¢10¢70¢10¢10¢</b>	
Hungarian Nails.....	70¢10¢70¢10¢10¢
Chair Nails.....	70¢10¢70¢10¢10¢
Zinc Glaziers' Points.....	50¢20¢5¢
Cigar Box Nails.....	50¢10¢50¢10¢5¢
Picture-Frame Points.....	50¢10¢50¢10¢5¢
Looking-Glass Tacks.....	50¢10¢50¢10¢5¢
Leathered Carpet.....	50¢10¢50¢10¢5¢
Brush Tacks.....	50¢10¢50¢10¢5¢
Shoe Finders, List Jan. 2, 1888, 10¢10¢	
Lining and Saddle Nails, List Jan. 1, 1888.....	10¢10¢5¢
Silvered.....	30¢10¢10¢
Japanned.....	20¢10¢10¢
Double-Pointed Tacks.....	85¢
Wire Carpet Nails.....	50¢10¢
Wire Brads & Nails, see Nails, Wire.	
Steel-Wire Brads, K. & E. Mfg. Co.'s list.....	50¢10¢
<b>Tap Bore—</b>	
Common and Rind.....	20¢10¢
Ive's Tap Bore.....	33¢45¢
Enterprise Mfg. Co.....	20¢10¢30¢
Clark's.....	33¢45¢
<b>Tapes, Measuring—</b>	
American.....	25¢10¢
Spring.....	40¢
Chesterman's, Regular list.....	25¢30¢
<b>Thermometers—</b>	
Tin Case.....	80¢80¢10¢
<b>Thimble Skins—See Skins.</b>	
<b>Ties, Bale—Steel</b>	
Standard Wire, list.....	50¢10¢5¢
<b>Tinners' Shears, &amp;c.—</b>	
Shears and Snips (P. S. & W.).....	20¢25¢
Punches, see Punches.	
Snips, J. Mallinson & Co.....	33¢45¢
<b>Tinware—</b>	
Stamped, Japanned and Pieced, list Jan. 20, 1887.....	75¢75¢5¢
<b>Tire Benders, Upsetters, &amp;c.—</b>	
Stoddard's Lightning Tire Upsetters.....	15¢
Tire Perfect Tire Bender.....	15¢
<b>Tobacco Cutters—</b>	
Champion.....	20¢10¢30¢
Wood Bottom.....	¢ doz \$5.00¢8.25
All Iron.....	¢ doz \$4.25
Nashua Lock Co.'s ¢ doz.....	\$18.00 50¢55¢
Wilson's.....	55¢
Sargent's.....	¢ doz \$24, dis 55¢10¢
Acme.....	¢ doz \$20.00, dis 40¢
<b>Transom Lifters—</b>	
Wollensak's Class 3 and 4, Bronzed Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Reith's Bronzed Iron Rods, list Jan. 1, 1887.....	50¢
Reith's Real Bronze or Nickel Plate.....	50¢25¢
Excelsior.....	50¢10¢25¢
Shaw's.....	50¢10¢
Payson's Universal.....	40¢40¢10¢
<b>Traps—</b>	
Game—	
Newhouse.....	75¢40¢5¢
Onida Pattern.....	30¢70¢25¢
Game, Blake's Patent.....	40¢10¢5¢
Mouse and Rat—	
Mouse Wood Choker.....	¢ doz holes, 11¢12¢
Mouse, Round Wire.....	¢ doz \$1.50, dis 10¢
Mouse, Cage Wire.....	¢ doz \$2.50, dis 10¢
Mouse, Catch 'em-alive.....	¢ doz \$2.50, dis 15¢
Mouse, "Bonanza".....	¢ gr \$10.00 net
Mouse Delusion.....	¢ gr \$18.00, dis 15¢
Rat, "Decoy".....	¢ gr \$10.00, dis 10¢
Ideal.....	¢ gr \$10.00
Cyclone.....	¢ gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.....	¢ doz 90¢
In full cases.....	¢ doz 75¢
<b>Trowels—</b>	
Lothrop's Brick and Plastering.....	25¢
Reed's Brick and Plastering.....	15¢
Disston's Br'k and Plastering, 25¢25¢10¢	
Peace's Plastering.....	25¢
Clement & Maynard's.....	20¢
Brade's Brick.....	15¢30¢
Worrall's Brick and Plastering.....	20¢
Garden.....	70¢
<b>Triers—</b>	
Butter and cheese.....	25¢
<b>Trucks, Warehouse, &amp;c.—</b>	
B. & L. Block Co.'s list, '82.....	40¢
<b>Tubes, Boiler—</b>	
See Pipe.	
<b>Twine—</b>	
Flax Twine—	
No. 1, 14 and 16 B. Balls.....	22¢ 30¢
No. 12, 14 and 16 B. Balls.....	21¢ 25¢
No. 18, 14 and 16 B. Balls.....	18¢ 28¢
No. 24, 14 and 16 B. Balls.....	18¢ 28¢
No. 30, 14 and 16 B. Balls.....	16¢ 27¢
No. 204, Mattress, 14 and 16 B. Balls.....	48¢50¢
Chalk Line, Cotton, 1/2 B. Balls.....	25¢
Mason Line, Linen, 1/2 B. Balls.....	55¢
2-Ply Hemp, 1/2 and 1/2 B. Balls (Spring Twine).....	11¢
3-Ply Hemp, 1/2 B. Balls.....	12¢12½¢
3-Ply Hemp, 1 1/2 B. Balls.....	11¢11½¢
Cotton Wrapping, 5 Balls to B.....	15¢16¢
2, 3, 4 and 5-Ply Jute, 1/2 B. Balls.....	10¢
Wool.....	8¢8¢5¢
Paper.....	13¢14¢
Cotton Mops, 6, 9, 12 and 15 lb to doz.....	18¢
<b>Vises—</b>	
Solid Box.....	60¢60¢5¢
Fisher & Norris Double Screw.....	15¢10¢
Stephens'.....	25¢30¢
<b>Parker's.....</b>	
20¢25¢	
Wilson's.....	55¢
Howard's.....	40¢
Bonney's.....	40¢10¢
Millers Falls.....	40¢10¢
Trenton.....	40¢10¢10¢
Merrill's.....	15¢20¢
Sargent's.....	60¢10¢10¢
Backus and Union.....	40¢
Double Screw Leg.....	15¢10¢
Prentiss.....	20¢5¢25¢
Simpson's Adjustable.....	40¢
<b>Saw Filers—</b>	
Bonney's, Nos. 2 & 3, \$15.00.....	dis 40¢10¢
Stearns.....	33¢45¢10¢10¢10¢
Stearns' Silent Saw Vises.....	33¢35¢
Sargent's.....	60¢10¢
Hopkins.....	¢ doz \$17.50, dis 10¢
Reading.....	40¢10¢
Wentworth Hand Vises.....	¢ gr \$42.00
Cowell Hand Vises.....	20¢
Bauer's Pipe Vises.....	10¢
<b>Wagon Boxes—</b>	
Per B.....	25¢
<b>Wagon Jacks—</b>	
Daisy.....	¢ doz \$4.00, dis 25¢
<b>Washer Cutters—</b>	
Smith's Pat. ¢ doz \$12.00, dis 20¢10¢10¢	
Johnson's.....	¢ doz \$11.00, dis 33¢45¢
Penny's.....	¢ doz Pol. \$14; Jap'd, \$16.00, dis 55¢
Appleton's.....	¢ doz \$16.00, dis 60¢
Bonney's.....	30¢10¢
<b>Washers—</b>	
Size.....	1/2 5-10 3/4 1/2 5/8 3/4 1

# CURRENT METAL PRICES.

JANUARY 30, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

## IRON AND STEEL.

### Bar Iron from Store.

Common Iron:	
3/4 to 2 in. round and square...	1/2 lb 1.90 @ ...
1 to 6 in. x 3/4 to 1 in. ....	1/2 lb 2.00 @ 2.10
Refined Iron:	
3/4 to 2 in. round and square...	1/2 lb 2.20 @ 2.30
1 to 4 in. x 3/4 to 1 1/2 in. ....	1/2 lb 2.20 @ 2.30
4 1/2 to 6 in. x 3/4 to 1 in. ....	1/2 lb 2.20 @ 2.30
1 to 6 in. x 1 1/2 and 5-16	1/2 lb 2.20 @ 2.30
Rods—3/4 and 1 1/2 round and sq.	1/2 lb 2.20 @ 2.30
Bands—1 to 6 x 3-16 to No. 12.	1/2 lb 2.20 @ 2.30
"Burden Best" Iron, base price.	1/2 lb 3.00 @ ...
Burden's "H. B. & S." Iron, base price.	1/2 lb 2.80 @ ...
"Ulster" .....	1/2 lb 3.10 @ ...
Norway Rods .....	1/2 lb 4.00 @ 5.00

### Merchant Steel from Store.

Open-Hearth and Bessemer Machinery,	
Toe Calk, Tire and Sleigh Shoe, base price in small lots.	2 1/2¢
Best Cast Steel, base price in small lots	5 1/2¢
Best Cast Steel Machinery, base price in small lots.	5¢

### Sheet Iron from Store.

Common American.	R. G. Cleaned.
10 to 16.	1/2 lb 2.75 @ 2.80
17 to 20.	1/2 lb 2.85 @ 2.90
21 to 24.	1/2 lb 3.00 @ 3.10
25 and 26.	1/2 lb 3.20 @ 3.30
27.	1/2 lb 3.35 @ 3.45
28.	1/2 lb 3.50 @ 3.60

Galv'd, 14 to 28.	1/2 lb 4.50 @ 4.80
Galv'd, 1 to 24.	1/2 lb 4.87 1/2 @ 4.75
Galv'd, 25 to 28.	1/2 lb 5.25 @ 5.12
Galv'd, 27.	1/2 lb 5.62 1/2 @ 5.48
Galv'd, 28.	1/2 lb 6.00 @ 5.85
Patent Platinized.	1/2 lb A 10¢ B, 9¢
Russia.	1/2 lb 9 1/2¢ @ 10¢
American Cold Rolled B. B.	1/2 lb 5¢ @ 7¢

### English Steel from Store.

Best Cast .....	1/2 lb 15¢
Extra Cast .....	1/2 lb 16 1/2¢
Swaged, Cast .....	1/2 lb 16¢
Best Double Shear .....	1/2 lb 15¢
Blister, 1st quality .....	1/2 lb 12 1/2¢
German Steel, Best .....	1/2 lb 10¢
3d quality .....	1/2 lb 9¢
3d quality .....	1/2 lb 8¢
Sheet Cast Steel, 1st quality .....	1/2 lb 15¢
2d quality .....	1/2 lb 14¢
3d quality .....	1/2 lb 12 1/2¢

## METALS.

### Tin.

Banca, Pigs.	23 1/4¢
Straits, Pigs.	23 1/4¢
Englen, Pigs.	23 1/4¢
Straits in Bars.	24 1/4¢

### Tin Plates.

Charcoal Plates.—Bright.	Per box.
Melny Grade.	10 x 14, \$5.75 @ \$6.00
"	10 x 12, 6.00 @ 6.25
"	10 x 14, 5.75 @ 6.00
"	10 x 28, 12.00 @ 12.50
"	10 x 14, 7.25 @ 7.50
"	10 x 12, 7.50 @ 7.75
"	10 x 14, 7.25 @ 7.50
"	10 x 28, 15.00 @ 15.50
"	10 x 12, 7.50 @ 7.75
"	10 x 14, 7.25 @ 7.50
Call and Grade.	10 x 14, 6.00 @ 6.25
"	10 x 12, 6.25 @ 6.50
"	10 x 14, 7.25 @ 7.50
"	10 x 12, 7.50 @ 7.75
"	10 x 14, 7.25 @ 7.50
Allaway Grade.	10 x 14, 5.12 1/2 @ 5.25
"	10 x 12, 5.12 1/2 @ 5.25
"	10 x 14, 5.00 @ 5.12 1/2
"	10 x 28, 11.00 @ 11.50
"	10 x 12, 6.00 @ 6.25
"	10 x 14, 6.25 @ 6.50
"	10 x 12, 6.00 @ 6.25
"	10 x 14, 6.25 @ 6.50
"	10 x 28, 12.00 @ 12.50
"	10 x 12, 4.75 @ 5.00
"	10 x 14, 5.75 @ 6.00

### Coke Plates.—Bright.

Steel Coke.—10 x 14, 14 x 20.	\$4.75 @ \$5.00
10 x 20.	7.25 @ 7.50
20 x 28.	9.75 @ 10.25
IX, 10 x 14, 14 x 20.	5.50 @ 5.75
IX Grade.—10 x 14, 14 x 20.	4.40 @ 4.60

### Charcoal Plates.—Terne.

Dean Grade.—10 x 14 x 20.	\$4.40 @ \$4.62 1/2
20 x 28.	9.00 @ 9.25
IX, 14 x 20.	4.40 @ 4.62 1/2
20 x 28.	11.00 @ 11.37 1/2
Abecarne Grade.—10 x 14 x 20.	4.25 @ 4.50
20 x 28.	8.70 @ 9.00
IX, 14 x 20.	5.25 @ 5.50
20 x 28.	10.50 @ 10.80

### Tin Boiler Plates.

IX, 14 x 20.	112 sheets. \$12.50 @ \$12.75
IX, 14 x 28.	112 sheets. 12.75 @
IX, 14 x 31.	112 sheets. 14.25 @

### Copper.

Duty: Pig. Bar and Ingot, 4¢; Old Copper, 3¢	
1/2 lb. Manufactured (including all articles of which Copper is a component of chief value), 45¢ ad valorem.	
Ingot.	
Lake.	@ 17¢ @ 17 1/2¢
"Anchor" Brand.	@ 16 1/2¢ @ 17¢

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72	72	25	25	25	26	27	28	31	33
30	72	72	25	25	25	26	27	28	30	34
36	96	96	25	25	25	27	29	30	33	36
36	96	96	25	25	25	28	30	31	34	38
48	96	96	25	25	25	29	31	32	35	39
48	96	96	25	25	25	30	32	33	36	40
60	96	96	25	25	25	31	33	34	37	41
60	96	96	25	25	25	32	34	35	38	42
84	96	96	26	27	27	33	35	36	39	43
84	96	96	27	28	28	34	36	37	40	44
Over 84 in. wide			28	30	30	35	37	38	41	45

All Bath Tub Sheets. 16 oz. 14 oz. 12 oz. 10 oz. Per pound. \$0.53 0.30 0.32 0.35

Bolt Copper, 3/4 inch diameter and over, per pound. 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats. Per pound. 14 ounce to square foot and heavier. 28¢

12 ounce and up to 14 ounce to square foot. 29¢

10 ounce and up to 12 ounce. 31¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning. Tinning sheets on one side, 10, 12 and 14 x 48 each. 8¢

Tinning sheets on one side, 30 x 60 each. 30¢

For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each. 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each. 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each. 12¢

Tinning sheets on one side, other sizes, per square foot. 2 1/2¢

For tinning both sides double the above prices.

Platinized Copper. Platinized Copper List May 5, 1888. Net

Brass and Copper Tubes. Seamless Copper. 3/4 inch 50¢ 1/2 inch 44¢ 1/4 inch 42¢ 3/8 inch 40¢ 1/2 inch 38¢ 3/4 inch 36¢ 1 inch 34¢ 1 1/4 inch 32¢ 1 1/2 inch 30¢ 2 inch 28¢ 2 1/2 inch 26¢ 3 inch 24¢ 3 1/2 inch 22¢ 4 inch 20¢ 4 1/2 inch 18¢ 5 inch 16¢ 5 1/2 inch 14¢ 6 inch 12¢ 6 1/2 inch 10¢ 7 inch 8¢ 7 1/2 inch 6¢ 8 inch 4¢ 8 1/2 inch 2¢ 9 inch 1¢ 9 1/2 inch 1¢ 10 inch 1¢ 10 1/2 inch 1¢ 11 inch 1¢ 11 1/2 inch 1¢ 12 inch 1¢ 12 1/2 inch 1¢ 13 inch 1¢ 13 1/2 inch 1¢ 14 inch 1¢ 14 1/2 inch 1¢ 15 inch 1¢ 15 1/2 inch 1¢ 16 inch 1¢ 16 1/2 inch 1¢ 17 inch 1¢ 17 1/2 inch 1¢ 18 inch 1¢ 18 1/2 inch 1¢ 19 inch 1¢ 19 1/2 inch 1¢ 20 inch 1¢ 20 1/2 inch 1¢ 21 inch 1¢ 21 1/2 inch 1¢ 22 inch 1¢ 22 1/2 inch 1¢ 23 inch 1¢ 23 1/2 inch 1¢ 24 inch 1¢ 24 1/2 inch 1¢ 25 inch 1¢ 25 1/2 inch 1¢ 26 inch 1¢ 26 1/2 inch 1¢ 27 inch 1¢ 27 1/2 inch 1¢ 28 inch 1¢ 28 1/2 inch 1¢ 29 inch 1¢ 29 1/2 inch 1¢ 30 inch 1¢ 30 1/2 inch 1¢ 31 inch 1¢ 31 1/2 inch 1¢ 32 inch 1¢ 32 1/2 inch 1¢ 33 inch 1¢ 33 1/2 inch 1¢ 34 inch 1¢ 34 1/2 inch 1¢ 35 inch 1¢ 35 1/2 inch 1¢ 36 inch 1¢ 36 1/2 inch 1¢ 37 inch 1¢ 37 1/2 inch 1¢ 38 inch 1¢ 38 1/2 inch 1¢ 39 inch 1¢ 39 1/2 inch 1¢ 40 inch 1¢ 40 1/2 inch 1¢ 41 inch 1¢ 41 1/2 inch 1¢ 42 inch 1¢ 42 1/2 inch 1¢ 43 inch 1¢ 43 1/2 inch 1¢ 44 inch 1¢ 44 1/2 inch 1¢ 45 inch 1¢ 45 1/2 inch 1¢ 46 inch 1¢ 46 1/2 inch 1¢ 47 inch 1¢ 47 1/2 inch 1¢ 48 inch 1¢ 48 1/2 inch 1¢ 49 inch 1¢ 49 1/2 inch 1¢ 50 inch 1¢ 50 1/2 inch 1¢ 51 inch 1¢ 51 1/2 inch 1¢ 52 inch 1¢ 52 1/2 inch 1¢ 53 inch 1¢ 53 1/2 inch 1¢ 54 inch 1¢ 54 1/2 inch 1¢ 55 inch 1¢ 55 1/2 inch 1¢ 56 inch 1¢ 56 1/2 inch 1¢ 57 inch 1¢ 57 1/2 inch 1¢ 58 inch 1¢ 58 1/2 inch 1¢ 59 inch 1¢ 59 1/2 inch 1¢ 60 inch 1¢ 60 1/2 inch 1¢ 61 inch 1¢ 61 1/2 inch 1¢ 62 inch 1¢ 62 1/2 inch 1¢ 63 inch 1¢ 63 1/2 inch 1¢ 64 inch 1¢ 64 1/2 inch 1¢ 65 inch 1¢ 65 1/2 inch 1¢ 66 inch 1¢ 66 1/2 inch 1¢ 67 inch 1¢ 67 1/2 inch 1¢ 68 inch 1¢ 68 1/2 inch 1¢ 69 inch 1¢ 69 1/2 inch 1¢ 70 inch 1¢ 70 1/2 inch 1¢ 71 inch 1¢ 71 1/2 inch 1¢ 72 inch 1¢ 72 1/2 inch 1¢ 73 inch 1¢ 73 1/2 inch 1¢ 74 inch 1¢ 74 1/2 inch 1¢ 75 inch 1¢ 75 1/2 inch 1¢ 76 inch 1¢ 76 1/2 inch 1¢ 77 inch 1¢ 77 1/2 inch 1¢ 78 inch 1¢ 78 1/2 inch 1¢ 79 inch 1¢ 79 1/2 inch 1¢ 80 inch 1¢ 80 1/2 inch 1¢ 81 inch 1¢ 81 1/2 inch 1¢ 82 inch 1¢ 82 1/2 inch 1¢ 83 inch 1¢ 83 1/2 inch 1¢ 84 inch 1¢ 84 1/2 inch 1¢ 85 inch 1¢ 85 1/2 inch 1¢ 86 inch 1¢ 86 1/2 inch 1¢ 87 inch 1¢ 87 1/2 inch 1¢ 88 inch 1¢ 88 1/2 inch 1¢ 89 inch 1¢ 89 1/2 inch 1¢ 90 inch 1¢ 90 1/2 inch 1¢ 91 inch 1¢ 91 1/2 inch 1¢ 92 inch 1¢ 92 1/2 inch 1¢ 93 inch 1¢ 93 1/2 inch 1¢ 94 inch 1¢ 94 1/2 inch 1¢ 95 inch 1¢ 95 1/2 inch 1¢ 96 inch 1¢ 96 1/2 inch 1¢ 97 inch 1¢ 97 1/2 inch 1¢ 98 inch 1¢ 98 1/2 inch 1¢ 99 inch 1¢ 99 1/2 inch 1¢ 100 inch 1¢ 100 1/2 inch 1¢ 101 inch 1¢ 101 1/2 inch 1¢ 102 inch 1¢ 102 1/2 inch 1¢ 103 inch 1¢ 103 1/2 inch 1¢ 104 inch 1¢ 104 1/2 inch 1¢ 105 inch 1¢ 105 1/2 inch 1¢ 106 inch 1¢ 106 1/2 inch 1¢ 107 inch 1¢ 107 1/2 inch 1¢ 108 inch 1¢ 108 1/2 inch 1¢ 109 inch 1¢ 109 1/2 inch 1¢ 110 inch 1¢ 110 1/2 inch 1¢ 111 inch 1¢ 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inch 1¢ 147 1/2 inch 1¢ 148 inch 1¢ 148 1/2 inch 1¢ 149 inch 1¢ 149 1/2 inch 1¢ 150 inch 1¢ 150 1/2 inch 1¢ 151 inch 1¢ 151 1/2 inch 1¢ 152 inch 1¢ 152 1/2 inch 1¢ 153 inch 1¢ 153 1/2 inch 1¢ 154 inch 1¢ 154 1/2 inch 1¢ 155 inch 1¢ 155 1/2 inch 1¢ 156 inch 1¢ 156 1/2 inch 1¢ 157 inch 1¢ 157 1/2 inch 1¢ 158 inch 1¢ 158 1/2 inch 1¢ 159 inch 1¢ 159 1/2 inch 1¢ 160 inch 1¢ 160 1/2 inch 1¢ 161 inch 1¢ 161 1/2 inch 1¢ 162 inch 1¢ 162 1/2 inch 1¢ 163 inch 1¢ 163 1/2 inch 1¢ 164 inch 1¢ 164 1/2 inch 1¢ 165 inch 1¢ 165 1/2 inch 1¢ 166 inch 1¢ 166 1/2 inch 1¢ 167 inch 1¢ 167 1/2 inch 1¢ 168 inch 1¢ 168 1/2 inch 1¢ 169 inch 1¢ 169 1/2 inch 1¢ 170 inch 1¢ 170 1/2 inch 1¢ 171 inch 1¢ 171 1/2 inch 1¢ 172 inch 1¢ 172 1/2 inch 1¢ 173 inch 1¢ 173 1/2 inch 1¢ 174 inch 1¢ 174 1/2 inch 1¢ 175 inch 1¢ 175 1/2 inch 1¢ 176 inch 1¢ 176 1/2 inch 1¢ 177 inch 1¢ 177 1/2 inch 1¢ 178 inch 1¢ 178 1/2 inch 1¢ 179 inch 1¢ 179 1/2 inch 1¢ 180 inch 1¢ 180 1/2 inch 1¢ 181 inch 1¢ 181 1/2 inch 1¢ 182 inch 1¢ 182 1/2 inch 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